

AMERICAN ARTISAN

FEBRUARY 1949

69th Year

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING



IN THIS ISSUE

- Figuring your income tax is like a cold shower—once you get in it feels all right. See Page 64.
- A valuable check list of oil heating problems is presented on Page 79. Don't miss it.
- Condensation is a serious difficulty in modern construction. An analysis is on Page 85.
- This month our series on farm ventilation deals with the dairy barn, heart of the dairy farm. Page 93.
- *The cover photo pictures Monel metal roofing being installed with cleats. A descriptive story on Monel as a roofing material starts on Page 89.*

LAMNECK

Simplenic

DUCT SIZE FORMULA



Easy to Remember, Easy

to Use . . . and, in fact, the convenience and simplicity of the entire application of the Simplenic System is just as easy as the figuring. This great new low-cost forced air system — the first extended plenum system in the industry — is providing the way to greater efficiency and greater profits for enthusiastic heating contractors all over the country.

Write Today
for
Simplenic

*descriptive price list
and the name of
your nearest jobber.*



© T.M.

CLAYTON & LAMBERT MFG. CO.

1760 Dixie Highway • Louisville 10, Ky.

Lamneck

**FURNACE PIPE
AND FITTINGS**

The best buy for your customers
the best bet for you . . .

STAINLESS STEEL for roof drainage



Fabrication is easy -- and U-S-S Stainless is available

Fabrication of these comparatively simple forms presents no special problems. The usual sheet metal shop equipment is adequate and practices are similar. The additional stiffness of Stainless causes little difficulty because gages used are usually thinner than those customary in other materials. For most applications, 26 gage is recommended.

U-S-S Stainless Steel sheet and strip are readily available now. The proper grade—U-S-S 18-8, Type 302—is stocked by most warehouse suppliers and by United States Steel Subsidiaries. If you want further information, write to Carnegie-Illinois Steel Corp., 2059 Carnegie Bldg., Pittsburgh 30, Pa. for our catalog "Roofing Products of Stainless Steel," now in preparation, and we'll put you on the list for an early mailing.

Now at last you can give your customers what they've always wanted—roof drainage equipment that they can put up and forget.

For well-made Stainless Steel gutters, downspouts, conductor pipes and flashing are *really* permanent. They last as long as the building stands. They won't rust or corrode. They will not discolor adjacent areas. They never need painting. They end repair and maintenance worries. With Stainless, *first cost is final cost!*

Despite its superior qualities

U-S-S Stainless construction costs no more

It's a fact. Actually the *material* cost of Stainless for drainage may even be slightly lower than that of other metals. That's because Stainless Steel weighs about 10% less per square foot than the non-ferrous metal used for quality jobs in the past. This means that, gage for gage, you get 10% more useable material with Stainless.

Cost is further reduced because Stainless Steel, when formed, has twice the strength of most other metals used for roofing purposes. Thus Stainless can be used with perfect safety in *lighter* gages, not only for residential work, but also for "tough" commercial and industrial jobs that in other metals call for heavy thickness.

Give them Stainless and you give them the best—by far the cheapest in the long run.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK



U-S-S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

UNITED STATES STEEL

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING



Member—Audit Bureau of Circulations
Member—Associated Business Papers



MANAGEMENT SECTION

CAC—THE WAY TO <i>Living</i> COMFORT	61
KRUCKMAN—INAUGURAL COMMENTS	62
INCOME TAX IS EASY!	63
NEWS SUMMARY OF THE MONTH	67
SOLVING YOUR BUSINESS PROBLEMS— IT CAN BE DONE	70
SMALL ADS SAVE DOLLARS	72

RESIDENTIAL AIR CONDITIONING SECTION

TEMPERATURE DISTRIBUTION IN A TEST HOUSE	75
CORRECT PRACTICE IN OIL HEATING (XIV)	79
NEUBECKER—LAYOUT OF OFFSETS	82
OPEN FOR DISCUSSION—INNIS	84
CONDENSATION—HOW TO CONTROL IT	85

SHEET METAL SECTION

MONEL METAL ROOFING OFFERS STRENGTH, DURABILITY	89
OPEN FOR DISCUSSION—ZIDECK	92
CORRECT PRACTICE IN FARM VENTILATION (V)	93
VENTILATION PROBLEM—REMOVING CLEANING FUMES	96
SHEET METAL SHOP LAYOUT AIDS PRODUCTION	97

DEPARTMENTS

THE EDITOR'S NOTEBOOK	6
ASSOCIATION ACTIVITIES	101
CONVENTION REPORTS—MINNESOTA ASSOCIATION	102
EQUIPMENT DEVELOPMENTS	105
NEW LITERATURE	112
INDUSTRY ITEMS	118

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

EDITOR

JOHN E. PETERSON

ASSOCIATE EDITOR

JOHN McCULLOUGH

ADVERTISING STAFF

WALLACE J. OSBORN
New York City
MURRAY Hill 9-8293

ROBERT A. JACK
Cleveland
YELLOWSTONE 1540

JAMES D. THOMAS
GEORGE C. CUTLER
Chicago
STate 2-6916

R. PAYNE WETTSTEIN
Los Angeles—MUtual 3827
San Francisco—YUkon 6-2522
Portland—ATwater 4107

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago 2, Ill., U.S.A.
Copyright 1949 by Keeney Publishing Company

Publisher—FRANK P. KEENEY
Manager—CHARLES E. PRICE
Production Manager—L. A. DOYLE

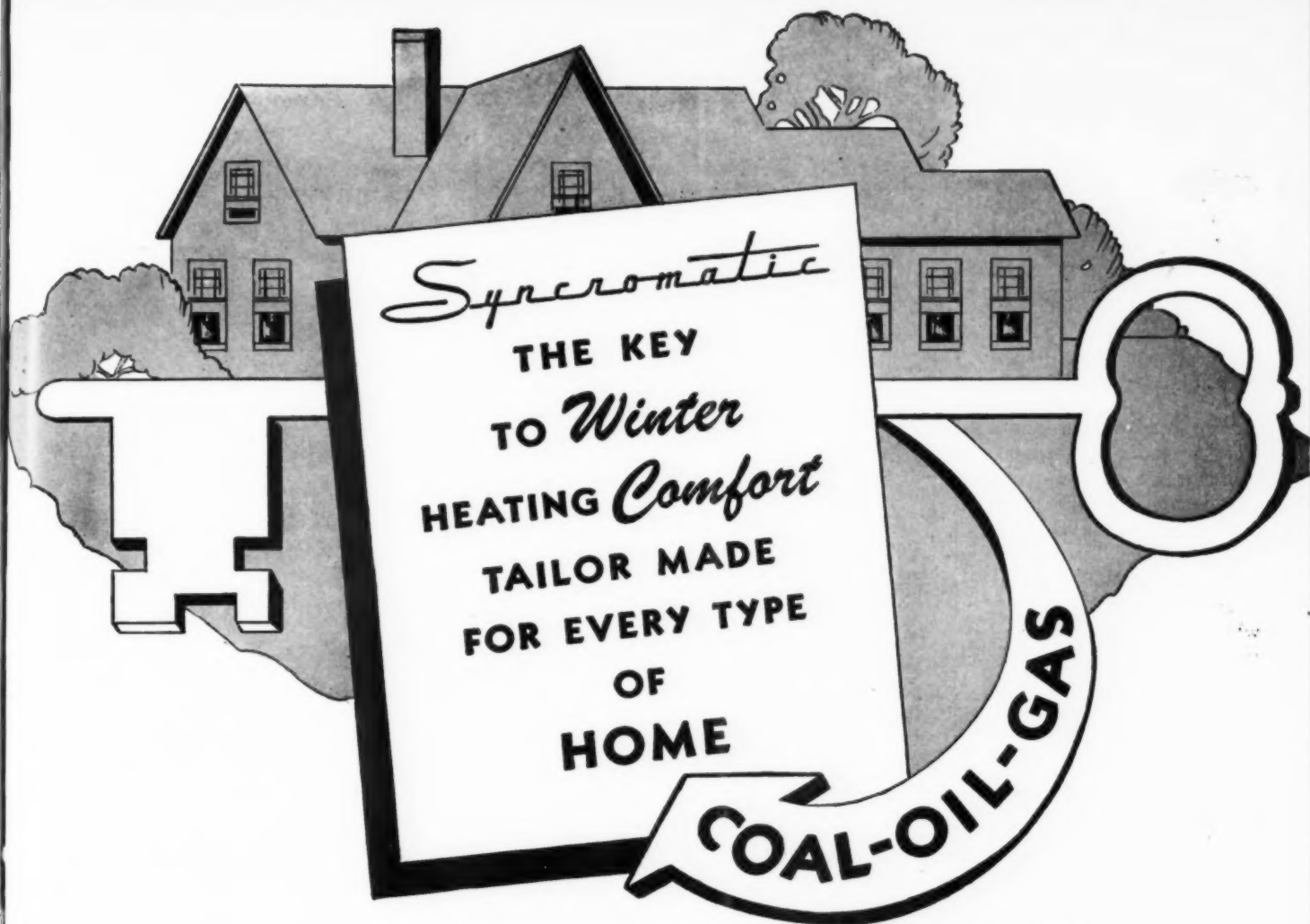
Yearly Subscription Price—U.S. and possessions, \$3.00; Canada, Cuba, Mexico, South America, Central America, \$4.00; Others, \$6.00. Single copies, U.S. and possessions, \$.35. Back numbers, \$.60. January, 1949, Directory Issue, \$1.50 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the Act of March 3, 1879. Additional entry at Milwaukee, Wisconsin.

Founded 1880

FEBRUARY, 1949

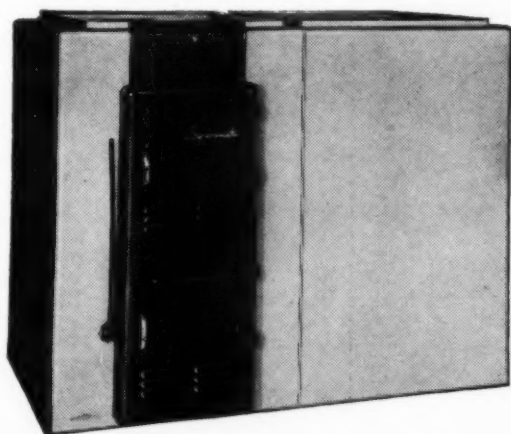
Volume 118, No. 2

AMERICAN ARTISAN, February, 1949



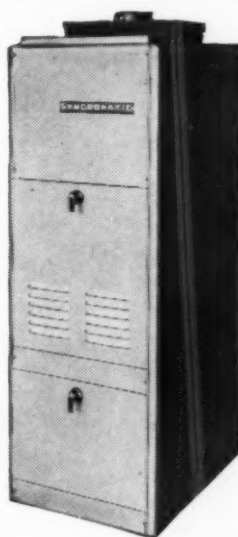
CFB COAL FIRED UNIT

Only Syncromatic has this design . . . the result of intelligent and logical application of the "COUNTER-FLOW" principle and a completely and unparalleled Front construction . . . GROUND FIT DOORS COMBINED WITH VENTILATED STEEL CABINET SHIELD. The only coal unit made that can be converted to high efficiency oil firing.



GFB GAS FIRED UNIT

A complete range from 75,000 to 240,000 BTU. All heat exchangers built of heavy 10 gauge corrosion resisting steel. "COUNTER-FLOW" principle as used in all Syncromatic Furnace Units.

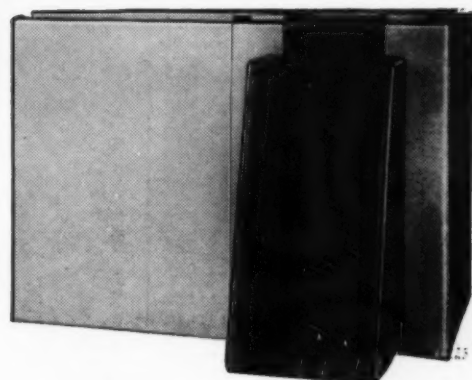


OFB OIL FIRED UNIT

The Syncromatic Oil Fired Unit employs the "COUNTER-FLOW" principle in warm air heating . . . one of the most efficient methods of heat transfer known. Compact and completely welded heavy gauge heat exchanger . . . your best insurance for safety and long life. Just compare the gauge and construction of Syncromatic with any other oil-fired unit.



COUNTER FLOW PRINCIPLE
MEANS PERFECTION IN
HEATING EFFICIENCY



Syncromatic Corporation
WATERTOWN, WISCONSIN

the editor's notebook

Requests Service Forms

We received an inquiry from a reader of *AMERICAN ARTISAN* who claims that he saw a reproduction and article describing a "service order" used by Elliot Lewis Co. of Philadelphia. While we have located the form No. EI-501 which we manufactured for this customer, we are most naturally interested in the publicity given this form in your issue.

Will you please favor the writer with a tear sheet so that we may be informed and thereby be in a better position to follow through on the observation of your readers. The courtesies extended to us in this matter are very much appreciated.

W. R. LENDY
The Shelby Salesbook Co.
Shelby, Ohio

We gladly comply with your request for a set of tear sheets from our November issue in which your form No. EI-501 was illustrated. You will note that J. J. Mirabile is associated with Elliot Lewis Co. of Philadelphia and that the article is an installment of a comprehensive series on the subject of oil heating.

It seems that the complexity of business today arouses an intense interest in business forms and it is gratifying that our readers are alert to the savings of time that can be effected by their use.—ED.

Apropos of Nothing

It is just 10 years since the Time Capsule was set in the ground at New York World's Fair. To be opened in the year 9638, the gadget contains

AT-A-GLANCE TANK GAUGES

- ✓ Accurate capacity reading
- ✓ Clear, long range visibility
- ✓ Patented, heavy duty plastic dome . . . Shockproof and breakproof
- ✓ No complicated mechanism
- ✓ Durable construction
- ✓ Withstands air pressure in excess of 100 lbs. per sq. inch
- ✓ Factory adjusted
- ✓ Guaranteed leakproof
- ✓ Underwriters' listed



CHECK THESE

Sentry FEATURES
FOR BETTER PERFORMANCE




SENTRY DRAFT CONTROLS

- ✓ Sensitive operating action
- ✓ Completely automatic operation
- ✓ Non-corrosive brass bearings
- ✓ Easy to install . . . quickly!
- ✓ Factory adjusted for accuracy
- ✓ Durable, rugged construction
- ✓ No servicing necessary
- ✓ Full range of sizes from 6" to 12"
- ✓ Underwriters' listed
- ✓ Fully warranted and guaranteed

On guard
24 hours
a day!



Write  for descriptive literature

KRUEGER *Sentry* GAUGES

GREEN BAY • WISCONSIN

the editor's notebook

exhibits of what, a decade back, we roughly called our civilization.

Oil Shortage Licked

Just how was the superdemand for oil products met, in spite of shortages of needed steel, manpower, and money, and in spite of inadequate transportation facilities?

The answer, says Robert E. Wilson, chairman of the Board of Directors, Standard Oil Company (Indiana), lies in three C's: Cooperation, Conservation, and Competition.

In an address before the annual convention of the American Petroleum Institute, Mr. Wilson recognized the cooperation of the public; federal, state, and municipal officials, the railroads, the manufacturers of oil burners, and from others who were in a position to influence the supply or demand trends when the fuel oil shortage was licked last winter.

Success of the conservation programs initiated by the oil industry was sustained by consumers who followed suggestions for saving fuel oil.

How did competition help to relieve the crisis? Here is the way Mr. Wilson told it:

The final, and I think the most vital factor in licking scarcity problems has been competition. This statement may surprise those who thought that competition was largely eliminated during the supply crisis. It was not eliminated. During most of the last year there was, to be sure, a sharp decline in attempts to take each others' customers and outlets by means of cut prices and other inducements of the lush supply era. But there has



M Series Hi-Boy
Gas-fired



G Series Gas-fired
Air Conditioner

GAS

Q Series Gravity
Gas-fired

Marvellaire

OIL



D Series Hi-Boy
Vaporizing Oil-fired



B Series Hi-Boy
Pressure Oil-fired



E Series Oil-fired
Air Conditioner



K Series Oil-fired
Air Conditioner

MODERN HEAT

for modern homes

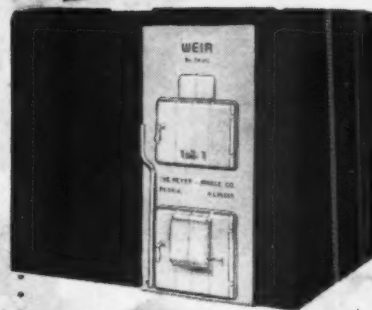
More to sell with *Marvellaire*

Now you can sell traditional WEIR-MEYER quality with important new advantages in performance, economy, and ease of operation. You'll quickly recognize that only Marvellaire offers so many completely new advantages—for all fuels—plus easier installation, lower inventory, and assured profits for you. If you want to build a permanent profitable business, under a valuable protected franchise, write for full information on Marvellaire. You may be in "open" territory.

THE MEYER FURNACE CO.
Manufacturers of Weir-Meyer Furnaces & Air Conditioners for Gas & Oil & Coal.
Peoria, Ill. and Peoria, Wis.
Since 1866

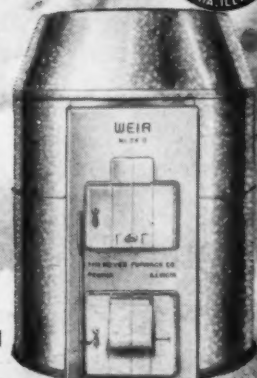


COAL



UC Series Coal-fired
Air Conditioner

U Series Coal-fired
Gravity Furnace



*the editor's
notebook*

never been such intense competition by each and every company in the important job of trying to take care of its own customers almost regardless of costs, and thus retain their good will and hold their business for the future.

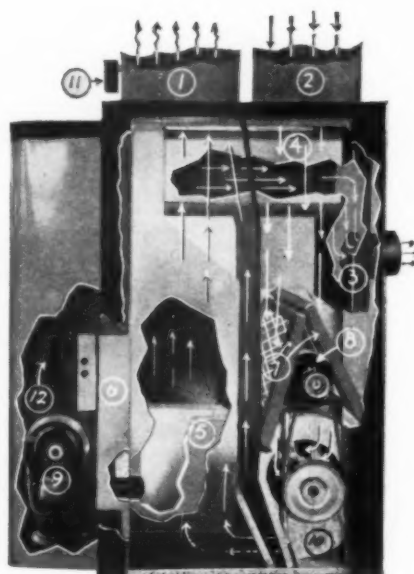
Yes, competition is at work as much in times of short supply as it is in days of oversupply, only it works in different ways—in ways that prove the superiority of a free economy.

Not competition for the consumer's business, but determined and untiring competition for the supplies to fill his orders, licked the 1947-1948 supply problem. Can you imagine companies hauling trainloads of crude and products thousands of miles every day from remote points to refineries and customers for any reason except to show their ability to take care of their customers' needs? Certainly they did not do so for present profit, for there was generally a direct loss in the operation.

The lengths to which companies went to meet the crisis is a long story that will never be fully told. Abnormal freight costs, emergency deliveries by truck from far-distant points, and heavy overtime became normal practices. Competition alone explains the tremendous drive producers have put on to find more oil, the building of new refinery units, the opening up of old refineries and operating obsolete submarginal units of refineries, the extension and enlarging of pipe lines, and the wholesale addition of tankers and barges to the waterborne oil-carrying fleet. It is competition that has prodded the industry into pouring nearly five



Quality and Beauty AT LOW COST!



5 Sizes Counter-Flo Basement Type
66,000 to 200,000 Btu.

2 Sizes Utility Type Hi-Boys
85,000 and 100,000 Btu.

One Gravity Furnace—76,500 Btu.

A SIZE and TYPE for EACH HOME
NATION-WIDE DISTRIBUTION

Write—

J. V. PATTEN COMPANY

Sycamore, Illinois

*the editor's
notebook*

billion dollars into new facilities since 1946, spending more for that purpose each year than its total net earnings and seriously enlarging the debt it must manage in an unpredictable future.

Competition for ever larger supplies has kept the wheels going around in accelerating tempo. Imagine what would have happened if government had stepped in as many urged, and started pooling and rationing the scant supplies of last winter among all consumers. Immediately all incentive for rival companies to try to outdo each other in caring for their respective customers would have died. The responsibility would have been on government. No company would have had anything to gain by incurring abnormal costs to take care of the customers of a government pool.

Without competition the solution of the supply problem in this country might have been what it is in Russia—a failure in spite of stern coercive measures by government; or it might have been what it is in England—mere division of scarcity without effort or incentive to supplant it again with abundance.

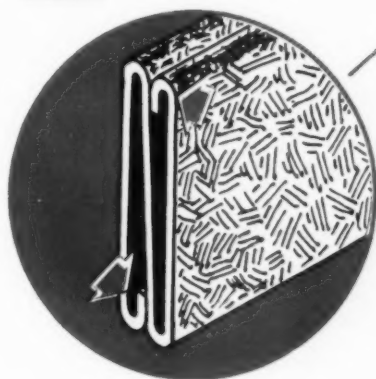
Compensation for Sickness

California, Rhode Island, and New Jersey have already expanded their unemployment compensation systems to include loss of pay from sickness and accidents. Governor Dewey has proposed that the State of New York also should extend its coverage and similar proposals are under consideration in a number of states.

THE CLEATFORMER

...already setting new records in
FABRICATION ECONOMY!

*A cleat you couldn't afford
to use . . . now becomes a
cleat you can't afford
Not to use!*

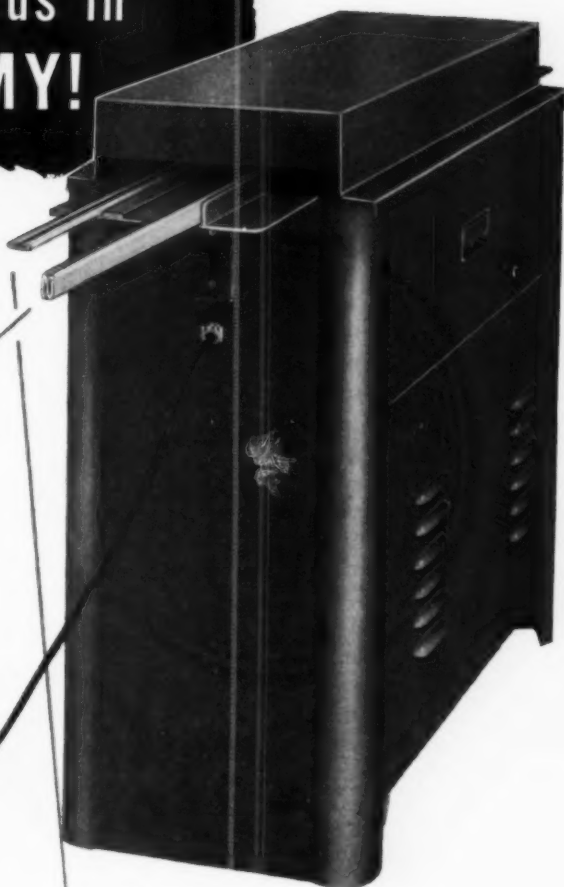


**S CLEAT
WITH HEM
ON BOTH
EDGES**

Never before practical because of its cost, the double hemmed S Cleat is now made on the CLEATFORMER in a matter of seconds in a single pass through the machine.

The double hem means greatly increased strength and rigidity. It means vastly improved appearance. It means that lighter material may be used for cleats without sacrifice of strength—or that longer cleats may be used without resorting to extra heavy gauge material.

Your Cleatformer will pay for itself quickly out of savings effected!



**DRIVE
CLEAT**

The CLEATFORMER makes both S and Drive Cleats with no change-over. Get the full story on this new "money-maker" in the famous Lockformer Line. Write us for literature and the name of the Lockformer Distributor nearest you.

THE LOCKFORMER CO.

4615 W. ROOSEVELT ROAD

CHICAGO 50, ILLINOIS

the editor's notebook

This new form of social legislation provides for unemployment pay for sickness and accidents outside of employment. In this respect it differs from state workmen's compensation insurance which provides for loss of time from occupational sickness and accidents incurred during the course of employment.

When these new benefits are added to present unemployment and compensation insurance programs, all forms of unemployment from any cause are covered.

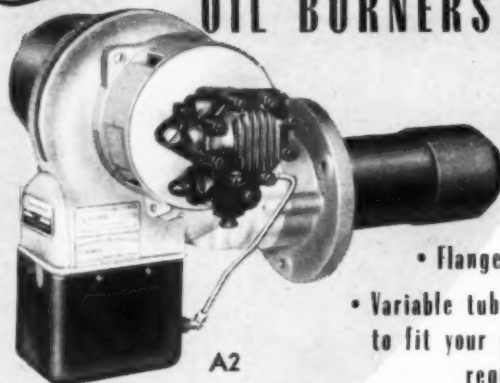
Expectations are that a Federal law will be enacted following the federal-state pattern for unemployment compensation. If so, a Federal tax will be imposed against which a state tax will be credited in states which enact supporting legislation. This will encourage states to follow the Federal program.

The general pattern for payment of these benefits has not yet been established. In California and Rhode Island the employee pays the entire cost, whereas in New Jersey the employer pays a part of the cost.

Lower Housing Costs

That lower cost housing can be accomplished through efficient use of standard materials coupled with new, practical methods of putting them together has been established in a nationwide competition, winners of which were recently announced by *Practical Builder*, a national building contractors' publication. The present steady availability of building materials and products, and the already successfully demonstrated newer building meth-

Sundstrand OIL BURNERS



- Flange mounted
- Variable tube lengths to fit your particular requirements

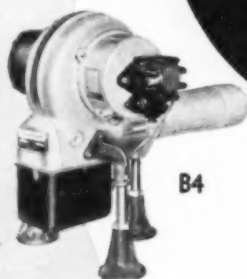
A2

ALL SURFACES MACHINED
PRECISION MADE THROUGHOUT
COMPLETELY FIRE TESTED



A2

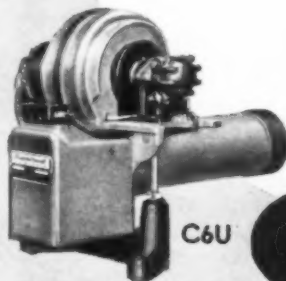
the
"CUSTOM-BUILT"
LINE
for forty-nine



B4



B5



C6U

meet all local and
state requirements

WRITE US FOR COMPLETE INFORMATION

SUNDSTRAND ENGINEERING CO.

ROCKFORD • ILLINOIS

the editor's notebook

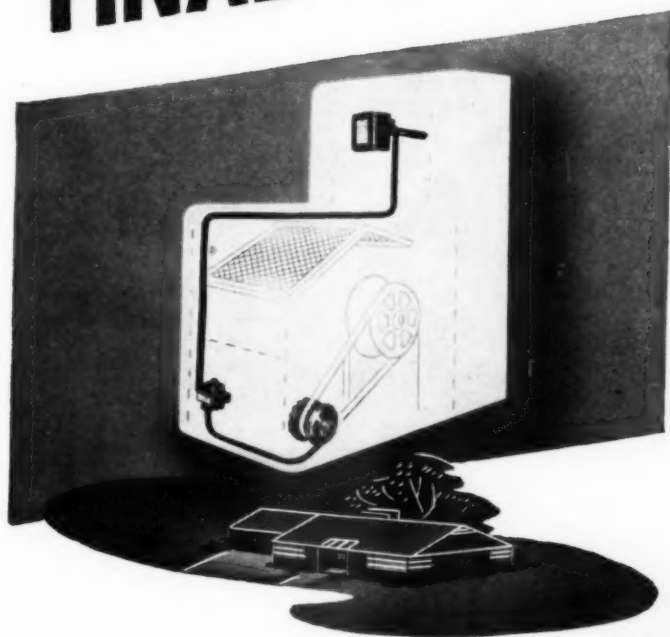
ods, make these answers to lower cost housing a reality.

Although some of the cost saving features brought to light in the prize winning house designs have not been actually tested in the field, they are known to be based on sound, demonstrable principles of building economy. For instance, one of the houses has been built in St. Louis at a cost of from \$6 to \$7 per square foot, a figure far below that of any comparable home building in that area. At \$6 per square foot, the prize winning small two bedroom house can be built at St. Louis for considerably less than \$6,000. In Cleveland, another house is being built at \$10 per square foot against the usual \$14 per square foot for that area.

Seeking a fresh approach to economy construction that stimulates greater labor productivity, as well as reduces waste without sacrificing structural quality or adequate small home livability, the entries did not have to conform to existing building codes. The editors, working with a panel of six building and architectural authorities, characterized the entries as forming "the most direct and practical step to date toward solving the high building costs riddle."

Among the aims of the competition was the suggestion that entrants plan the use of new and, where possible, mass produced building products in the plans submitted. This brought out extensive adaptation of simple framing technique, truss roof construction, basementless design, modular principles in layout, movable non-loadbearing partitions, simple heating systems, and a

The FINAL TOUCH----for Perfect Warm Air Heating



MORE SALES MORE SATISFIED CUSTOMERS

At a cost within the reach of the average home owner you can now offer a control that will end drafts—hot and cold “layers” of air—“cold 70”. On new installations or jobs already installed, it makes a more satisfied user of forced air heating.



Cool air being gently expelled from ducts.



Now the warmer air starts coming.



The rooms need heat. Blower at full speed.



Thermostat satisfied — blower starts slowing down.



Everything comfortable—just a warm zephyr to keep it that way.

MASTER BLOWERTROL

It starts the motor at a plenum temperature of 100° and gradually increases the speed of the blower as the plenum temperature rises until it reaches 125°. The blower operates at full speed until the plenum temperature drops below 125° at which point it gradually decreases speed as the plenum temperature drops.

NOT JUST A ~~RUSH~~ OF HEAT—

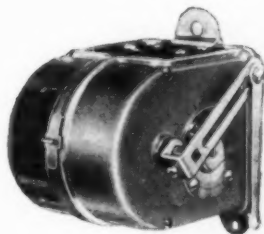
It's ————— comfort ————— Flowing In

SPRING RETURN HEAT REGULATORS



Type A 12
Thermostat

This thermostat is designed for two-wire operation and is regularly furnished in an ivory colored plastic case. It has a sensitive bimetal blade, magnetic snap-action and shield to protect the contacts from dust.



Type B 12
Spring Return Motor

This is a deluxe model of a damper motor with many new features. It operates to two positions. When the thermostat is satisfied or the electrical power fails the motor is immediately returned to the CLOSED or OFF position by a heavy internal spring built right into the motor.

THE WHITE MANUFACTURING CO.

2368 University Ave.

Saint Paul, Minnesota

the editor's notebook

variety of products and methods promising new construction and space economies.

General features which characterized the winners and many of the entries were: basementless construction; concrete walls exposed on both exterior and interior; modular principles used in layout; simple framing techniques; truss roof construction; non-load-bearing and movable partitions; floor furnaces, in-the-wall heaters, and simple warm air heating systems requiring a minimum of ductwork; flat and shed type roofs; expansible features; large window areas; carports instead of garages; and site assembly techniques.

Incentives Pay Off!

The Lincoln Electric Co. distributed \$3,821,973 incentive payments to 1097 workers for the year 1948. These payments, as an average, double the income of every member in the organization, according to J. F. Lincoln, president of the company, who, in making these payments, made the following statement:

"Our incentive program at The Lincoln Electric Co. has not only increased wages but also has reduced the selling price of its products to less than half that of comparable products on the market. That means that the motors and generators used for welding as well as the welding electrodes which we produce sell for less than half the price of similar motors, generators and electrodes manufactured and sold by other organizations for other purposes.

"For the fiscal year 1948, the average product output per person on the payroll at Lincoln Electric is \$29,748.00

TTTT
BARBER
COLMAN
TTTT

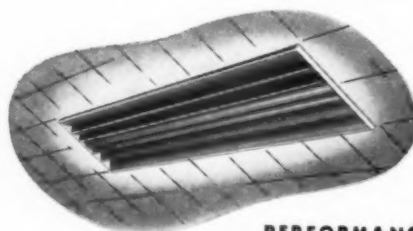


CEILING OUTLETS

These new line-type ceiling outlets can be used singly or end-to-end in continuous strips. They are constructed of scientifically-designed, rolled-steel members all dimensionally coordinated for use with acoustical ceilings and other building products.

A New Approach to Air Distribution

Keyed to modern architectural concepts, LINE-O-FLO, provides a vital contribution to continuity of design. High diffusion efficiency results in rapid induction of room air into the primary stream, quickly equalizing the temperature differential.



Ask for Bulletin F-2741 and get full performance data, dimensions, description, principles of operation, typical installation methods, and suggested uses. Write today.

PERFORMANCE DATA ASSURES ACCURATE ENGINEERING

Knowing the CFM available and the throw required, the number of standard units needed can be quickly obtained from reliable Performance Data tables. Two basic models are made — Model "LS" (shown above) and Model "LL" (designed to receive M21118 DAY-BRITE Lighting Unit).

BARBER - COLMAN COMPANY
1226 ROCK ST. • ROCKFORD, ILLINOIS

the editor's notebook

compared with \$6,895.00 as the average output per person of three other large electrical manufacturers. It will be seen that this is over four times greater than similar companies without incentives. When it is remembered that this record was made with a product selling for less than half of that of the usual manufacturer of similar equipment, the accomplishment is still more striking."

Reason Why

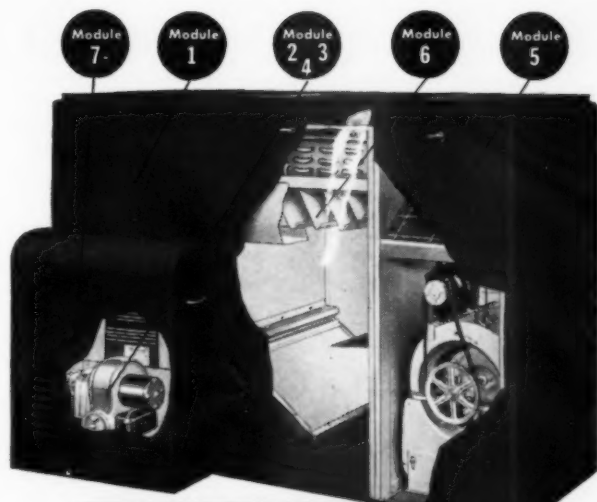
The blunt "verboden" method of stating company work rules is fast giving way to "reason why" explanations.

Emphasis is being placed on the fact that employees are human beings who respond favorably to treatment as individuals. The military type of regulation is ruled out automatically.

Contrasted with a decade ago, a recent survey finds that rules of conduct today are few. Examination of the rules books of 300 companies disclosed that only nine subjects appear in the majority. These deal with attendance, punctuality, registration, good housekeeping, reporting injuries, smoking, solicitation of money, and outgoing telephone calls.

Some companies find cartoons so effective in getting rules across that they present all their rules in this fashion.

The study revealed that many company rules are designed to promote the health and safety of the employee, protect them from annoyances, insure a working force of good character, protect company property, maintain production, insure conformance with legal standards, and further good public relations.



Mueller Climatrol

● These Mueller Climatrol Heating and Air-Conditioning Systems are all combinations of these standard Mueller Climatrol Modular Units.

	Module 1	Module 2 Vap. Oil Burner	Module 3 Atom. Oil Burner	Module 4 Gas Burner	Module 5 Blower-Filter	Module 6 Cooling Coil and Unit	Module 7 Vestibule
Gravity Oil Furnace							
Gravity Gas Furnace							
Oil Winter Air-Conditioner							
Gas Winter Air-Conditioner							
Oil Year-round Air-Conditioner							

Modular Furnaces

**You combine standard modular units to fit any job!
Sell other units later for added profits!**

Once again the Mueller Climatrol dealer is out in front of his competition — out in front with modular furnaces. No one else can offer anything like this. Here's how it sells for you:

- **Home owners like it!** You offer them a heating system to fit their exact needs and budget. They can expand their system as they can afford it — and wind up with the same completely engineered system they'd have installed if they had bought it all at once.
- **Builders and architects like it!** They believe in modular design. You offer equipment in keeping with their own progressive ideas, equipment that fits into their planning perfectly.
- **You offer better value!** Standardized parts simplify the manufacturing process. For the same cost, we can build more quality into every Mueller Climatrol Furnace.
- **One sale leads to another!** Once a customer, always a prospect for profitable repeat sales — because the initial installation can be expanded.

- **You cut your operating costs!** You don't need a large inventory. A balanced stock of modular units lets you handle any job from the simplest to the most complicated. You reduce buying, stocking, and warehousing expenses.

Modular Design — a great new advance!

The illustrations above show you how modular furnace design works. Each basic unit fits all others in any combination you need—from a gravity furnace to a year-round air-conditioning system. A complete system can be installed all at once — or a step at a time. You can change or reverse the combination to the right or left at any time, or expand it. Just switch or install the additional Mueller Climatrol modular units your customer wants.

Mueller Climatrol dealers are set for prosperous selling. If you're not a Mueller Climatrol dealer, plan now to become one. It's hard to buck a winner, *profitable to back one*. Write today for full information . . . L. J. Mueller Furnace Company, 2010 W. Oklahoma Ave., Milwaukee 7, Wisconsin.

MUELLER
Climatrol
REG. U. S. PAT. OFF.



And now... the **NEW**

PETRO

Warm Air
Unit

MODEL A-75



What this new PETRO offers:

High Heat Transfer: Assured by design of furnace, and by fire box and heat transfer surfaces precisely engineered for $\frac{3}{4}$ gallon flame.

Controlled Air Circulation: Without drafts or wide temperature fluctuations.

Air Cleaning and Humidifying: In addition to heating and circulating.

Petro "Oil-Miser" Oil Burner: Specially designed for Model A-75, with a Petro burner's traditional knack of squeezing every drop of fuel oil heat-dry. Patented Petro nozzle produces a hollow cone of finely atomized oil spray that ignites instantly and burns completely at high heating efficiency.

Other Burner Features: Safe, reliable, continuous electric ignition; heavy-duty, long-hour motor with automatic overload switch; oversized transformers, radio-shielded and moisture-proof.

Fuel Oil Savings: By supplying 75,000 Btu's per hour, Model A-75 meets the need of low oil consumption in homes where a larger furnace output would result in costly, prohibitive fuel bills.

No wonder so many contractors are enthusing over this new Petro Model A-75. A small, automatic, warm air heating unit, it fills the bill for the *thrifty* homeowner who needs a furnace of 75,000 Btu output... and no more.

Note the fine craftsmanship throughout, reflecting Petro's 45 years' oil heat experience. Note, also, such traditional Petro features as the "oil-miser" oil burner, sturdy long-lasting construction, handsome styling. Here you have strong selling points that help you take advantage of new sales opportunities.

Decide today to get full facts and figures. See the Petro heating and plumbing jobber for your wholesale trading area.

PETROLEUM HEAT AND POWER COMPANY

Stamford, Connecticut

Makers of Good Oil Burning Equipment Since 1903

REFINERIES . . . FUEL OIL STORAGE AND DISTRIBUTION TERMINALS
NATIONWIDE OIL BURNER SALES AND SERVICE FACILITIES

PETRO
REG. U. S. PAT. OFF.

OIL BURNERS • BOILER-BURNER UNITS
FURNACE-BURNER UNITS • WATER HEATERS

ARBOR PRESS" IN NAME ONLY!



**FRONTIER BRONZE CORPORATION
SPEEDS MANUFACTURE OF NEW
ALUMINUM PIPE WRENCH WITH
KRW MOTOR-DRIVEN
ARBOR PRESS**

**SEE HOW A LITTLE
INGENUITY SAVES**

A LOT OF MONEY! A special coining die used in this standard KRW 50-ton motor-driven arbor press removes burrs which result from normal manufacturing procedure. A simple operation which eliminates the need of costly grinding and assures a free-running, tight fitting, adjusting nut. *This new wrench weighs 60% less than conventional types yet withstands the same tests.*

THE CONVENTIONAL ARBOR PRESS has come a long way in the past few years. From such every day tasks as straightening and bending, it has grown into a full size production tool. Today — because of their low initial and operating cost — you'll find KRW Arbor Presses doing hundreds of manufacturing operations in all sorts of plants. A little ingenuity, combined with simple, inexpensive dies can save you money by releasing heavier, more expensive equipment for larger work.

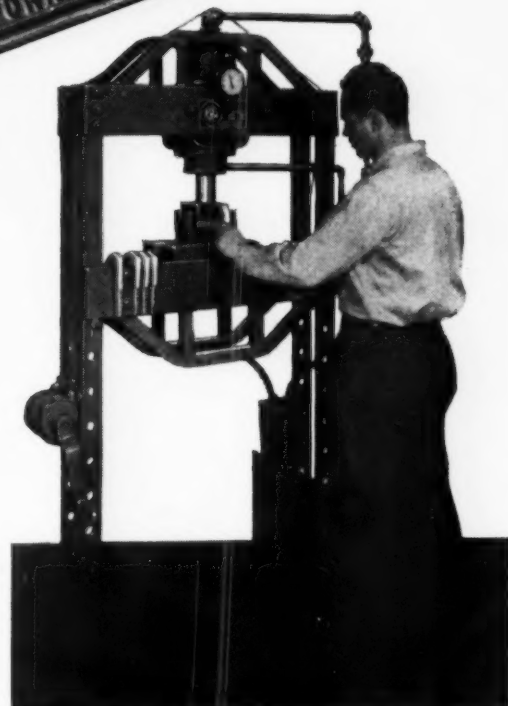
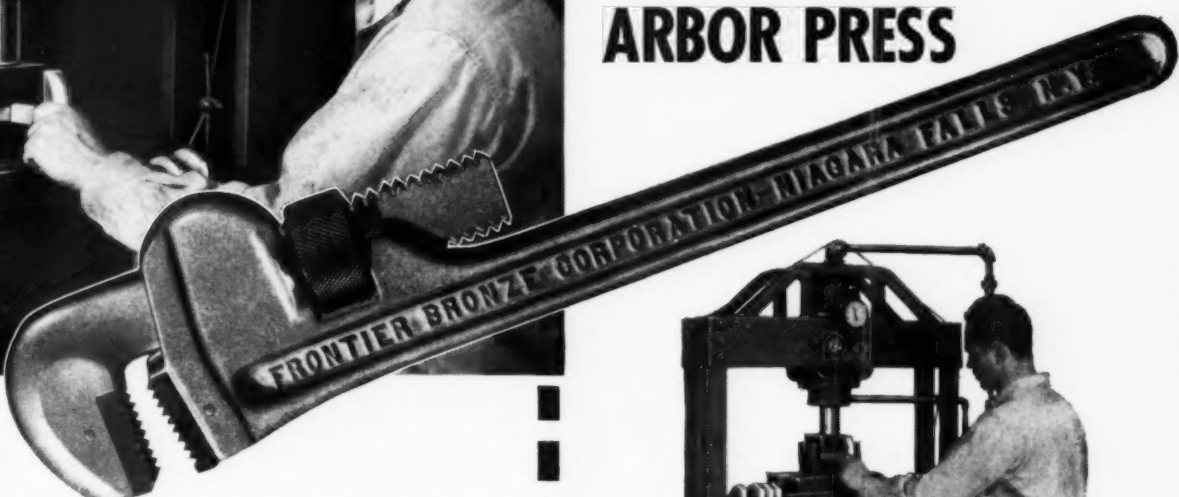
KRW Hydraulic Arbor Presses are available in varying sizes and tonnages, either hand-operated, air-operated or motor-driven. Tell us your needs . . . we are fully equipped to advise and engineer presses to do your particular job. Deliveries on standard presses within 10 days.

NEW KRW 100-Ton Blanking, Forming, Stamping Press
Batteries of these New KRW Presses are now in use in many manufacturing plants doing all manner of work hitherto handled on presses whose installation costs are higher than the total cost of these revolutionary KRW Presses. Write for literature.

NAME YOUR NEEDS! MAIL COUPON TODAY!

K·R·WILSON

215 MAIN ST. · BUFFALO 3, N. Y.



VERSATILE · ADAPTABLE · LOW COST!

● KRW Arbor Presses can be furnished for either vertical or horizontal ram travel. Distance between uprights can vary from 1 foot to 7 or better, daylight from inches to 6 feet and more. Even these specifications can be increased with minor changes and little cost. Investigate, use the coupon.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please send me complete information on KRW Arbor Presse
100-ton Hydraulic Presses ☐

Name.....

Address.....

City and Zone..... State.....

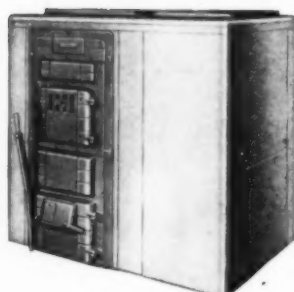
Luxaire THE STREAMLINED- LINE FOR **49**



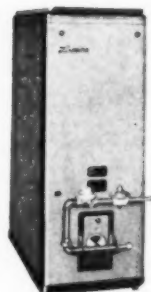
SERIES CA
Gas-Fired, Cast Iron,
Air Conditioning Unit.



SERIES V
Vaporizing Oil-Fired, Steel, Air
Conditioning Unit. Also available
in Utility Unit and Gravity Furnace.



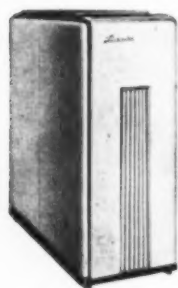
SERIES A-C-700-F
Coal-Fired, Steel, Air
Conditioning Unit.



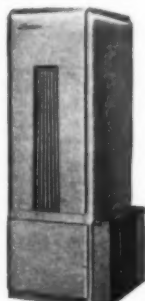
SERIES G
Gas-Fired, Steel
Gravity Furnace.



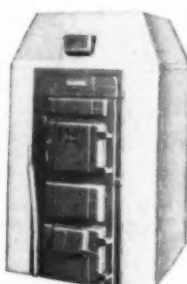
SERIES O
Gun, Oil-Fired, Steel, Air
Conditioning Unit.



SERIES A
Gas-Fired, Steel, Air
Conditioning Unit.



SERIES H
Gas-Fired Utility, Steel,
Air Conditioning Unit.



SERIES 700
Coal-Fired, Steel
Gravity Furnace.



SERIES C
Coal-Fired, Cast Iron,
Gravity Furnace.



SERIES CH
Gas-Fired, Cast Iron, Utility
Air Conditioning Unit.

A COMPLETE restyling of the entire Luxaire line, with die-formed, gracefully rounded, streamlined cabinets—cabinets that will blend with and fit into any modern decorating scheme—is Luxaire's New line for '49.

Both design and construction have been streamlined. Ease and speed in assembly of the precision fitting, die-formed parts is still an outstanding Luxaire feature. A substantially heavier gauge of steel than is

generally used in cabinet construction provides more substantial, more rigid cabinets. Luxaire leads both in practicality and beauty.

Whether it's for coal, gas or oil—for gravity or forced air installation—Steel or Cast iron heating elements—there's a New streamlined Luxaire Unit that will fit any heating job.

For a streamlined job in a streamlined plan it is a much easier job to *sell Luxaire* than compete against it.

THE C.A. OLSEN MANUFACTURING COMPANY

Luxaire



HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO



The Line that's Packaged



FOR MAXIMUM PROTECTION AND YOUR CONVENIENCE

All register items, and most accessories, are packed in individual cartons or wrappers. This assures perfect protection, not only in transit and in stock, but in delivery from jobber to dealer and right up to the point of installation. Nearly all items are shipped in fibre cases — rugged, but easy to handle and shelf. Case quantities are small, making it convenient for the trade to buy in case lots.

Better packaging is just one of a number of factors that make H&C a far better than average source of register and accessory supply. The complete line includes the ideal register for every type of installation. See your H&C jobbers or write for our new 1949 catalog.



HART & COOLEY MANUFACTURING CO. • Holland, Michigan
World's Largest Manufacturers of Registers, Grilles and Furnace Accessories



**COMPLETE
ASSEMBLY**

VS.

**PARTS
BUYING**



**... you Profit by Getting
the Full Story in Advance!**

"I am amazed at the great savings in time, money and effort that buying the complete assembly has brought to our plant." These are the comments of an outstanding and nationally known manufacturer in the heating field. He is by no means alone in his expression of the benefits he has obtained by buying the complete assembly. Many other famous manufacturers are profiting by his example and are just as generous in their praise. Why take on additional headaches in building and assembling your own blowers? Get the facts before you build! A LAU Sales Engineer will help you survey your entire operation and actually enable you to know in advance the advantages you will gain by buying the complete assembly. Here's a most unusual offer that will give you greater profits and fewer problems. Write, wire or call today!

Here's why You Profit...



1. Three point suspension type bearing and bracket. Assures great strength.



2. One piece motor mounting for any angle discharge. Simple... easy.



3. Lau-designed Blower wheel. More compact... great mechanical strength and efficiency in less space.

- You know and can better control your costs by buying blowers completely assembled, packaged, ready to put on the line.
- You operate with less storage space... fewer losses resulting from scrap and waste.
- You decrease expensive inventory and at the same time increase your volume.
- You save down time and change-over time costs which are continuing to rise on "short run" production.
- You turn your blower department on and off at will... no worry about mounting overhead.
- You save labor costs which are consistently becoming higher and higher.
- You get the practical experience in engineering, equipment, testing and research that LAU has built up over many years.
- You get the best precision produced blower with matched wheels and housings on the market... at a lower cost than ever!
- Your engineers have greater selectivity of blower sizes to meet competitive conditions. No expensive individual tooling for one or more sizes.

Write Today — Dept. "A" — for complete information



THE LAU BLOWER Company
DAYTON 7, OHIO, U. S. A.
WORLD'S LARGEST MANUFACTURERS OF FURNACE BLOWERS

"It's the VICTOR LINE for '49!"



VICTOR

Oil Fired Winter Air Conditioner

You need not sell yourself short on efficiency in order to obtain beauty for your prospects. The streamlined VICTOR line for '49 retains all the rugged, boiler-plate steel construction, all the exclusive, fast sales-closing features for which VICTOR is noted . . . plus the modern, beautiful casings your prospects demand. "It's the VICTOR LINE for '49". . . complete for COAL, GAS and OIL!

Write us . . . Investigate VICTOR for '49!

COAL • GAS • OIL FURNACES • OIL BURNERS • STOKERS • BLOWERS • ACCESSORIES

HALL-NEAL FURNACE Co.

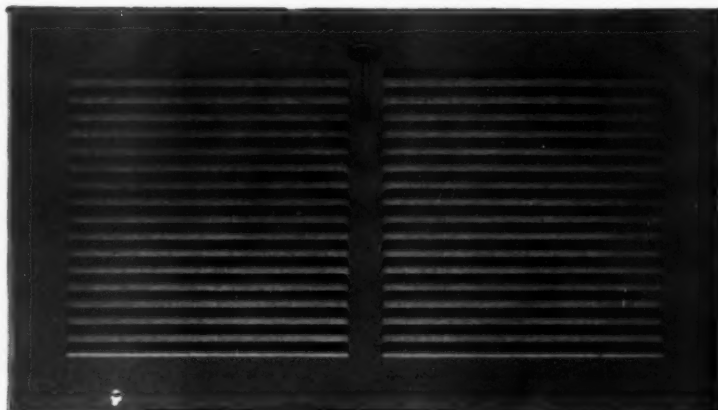
VICTOR Quality Furnaces Since 1890

1332 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

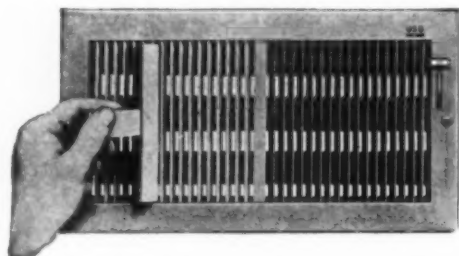
Auer
"7000" SERIES

AIRO-FLEX Registers

**2-Way
Direction
-Adjustable**



Airo-Flex is also made in the "4000" Series with vertical bar grille and multiple louvre. Method of adjustment of grille bars shown below. This gives 4-way control.



If you want an adjustable register distinctly in the quality class, but not in the high price class, the Auer "7000" Series will appeal to you. This fine product is formed and finished with real craftsmanship, gives a tight and trim installation, and has the appearance of a more expensive register. It will *stand up* and keep its good looks for many years. Use this ideal economy model on your forced air jobs for which 2-way deflection is sufficient. The single louvre is operated by a unique and patented spring tension device, permanently positive. Fins are adjustable for up-or-down flow. Beautifully designed, neat and substantial in construction, the Airo-Flex is an Auer quality product throughout. Supplied for wall or baseboard, also intakes.

Auer offers a complete line of modern and attractive floor, base, and wall registers and return faces, for gravity or air conditioning systems—including all air directional types. We also make perforated metal grilles for ventilation, concealment, or other purposes.

Ask for Auer Register Book—
or Special Grille Catalog "G".

THE AUER REGISTER CO., 3608 PAYNE AVENUE, CLEVELAND 14, OHIO

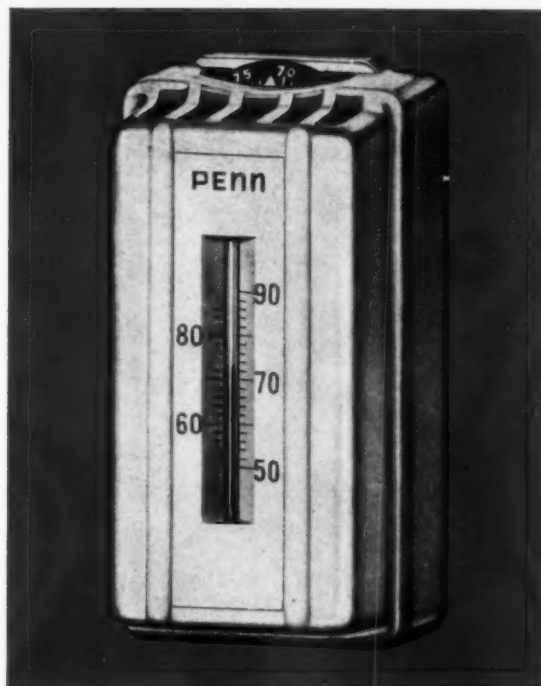
Auer

REGISTERS

& GRILLES for AIR CONDITIONING & GRAVITY



"Years Ago
I Learned That



PENN THERMOSTATS BANISH 'COLD 70' *and That's a Fact!"*

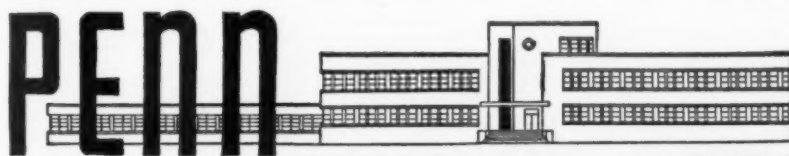
"Cut through all the fancy language about thermostats and you find the heart of the matter is comfort—real heating comfort. With automatic heat of any kind that means frequent, short burner operations in place of longer 'on' and 'off' periods. That's what Penn achieved—15 years ago—with *heat anticipation*. That's why Penn thermostats, during all these years, have given the *closer* temperature regulation that means real comfort—an end to zig-zag heating and the shivering of 'cold 70'; and that means good customer relations."

Take a tip from this typical experience of heating dealers—give your customers the comfort, and yourself the satisfaction and profit, which the Penn *original heat anticipating thermostat* assures. You'll appreciate the *simplicity* of the two-wire installation, the snap-acting contact structure and the all-around dependability of Penn thermostats. They banish "cold 70"—and that's a fact. **Penn Electric Switch Co., Goshen, Ind.** Export Division: 13 East 40th St., New York 16, U.S.A. In Canada, Penn Controls Ltd., Toronto, Ont.

Here's What Penn
Heat Anticipation
Does...

- * Holds the temperature at selected level—within one degree or less;
- * Avoids "cold 70"; ends discomfort of "zig zag" heating.
- * Automatically compensates for outside weather conditions.
- * Provides more frequent, short burner operations instead of longer runs and standby periods, assuring even flow of warmth for greater comfort and fuel economy.

It "hugs" the selected level for closer temperature control



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

BERGER ROOF DRAINAGE PRODUCTS

of *Enduro* Stainless Steel

Are Easy To Hang



With no changes in your methods, you easily can give your customers every advantage of stainless steel roof drainage systems. 28-gauge ENDURO Stainless Steel works as readily as familiar 26-gauge galvanized steel, and can be handled with the same tools and equipment. Your ordinary good soldering practice is recommended for joining, using 50-50 or commercial stainless steel solders. Immediately after soldering wash all joints with a 5% to 10% solution of washing soda with water, and remove all acid flux.

Be sure to hang with stainless steel accessories, fittings and nails. An all-ENDURO Stainless Steel drainage system will last for the life of the building . . . will not bleed or discolor paint . . . is stronger and more attractive than ordinary systems . . . resists rust . . . and costs less in the end.

Your jobber can supply you with the *full* line of ready-to-use Berger Drainage Products made of Republic ENDURO Stainless Steel, also Berger Drainage Products in galvanized steel and in copper.

**BERGER MANUFACTURING DIVISION
REPUBLIC STEEL CORPORATION
CANTON 5, OHIO**

Warehouses in Boston, Philadelphia and St. Louis

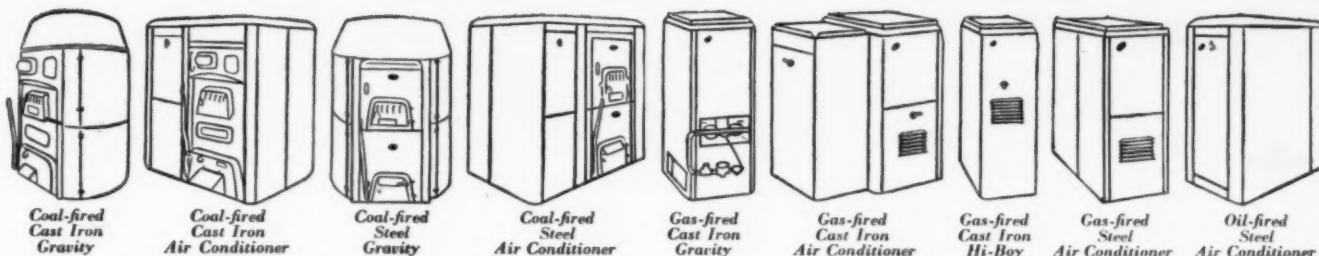
BERGER

REG. U.S. PAT. OFF.

**STAINLESS STEEL ROOF
DRAINAGE PRODUCTS**

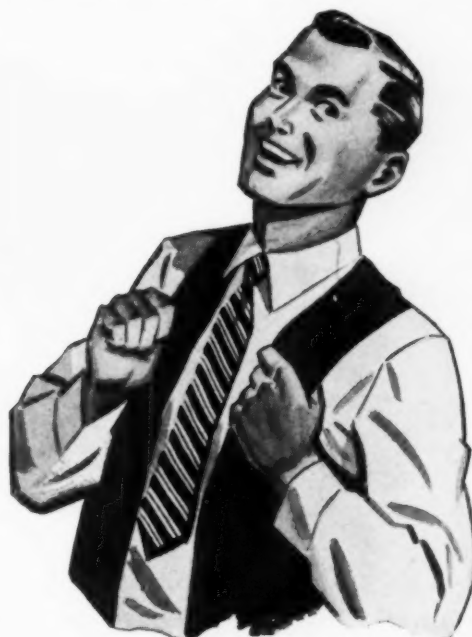
Berger Stainless Steel Drainage Products include: Snapfit Slopes Trough; "K" Gutter; Plain Round, Corrugated Round and Corrugated Square Conductor Pipe; plus a complete line of all necessary fittings. All are made of 28-gauge Republic ENDURO Stainless Steel, type 301, No. 2 mill finish.





**A Complete Line you'll
be proud to handle**

Rybolt



HEATING UNITS

Forced Air and Gravity

Cast Iron and Steel

There's a Rybolt heating unit specifically designed for every fuel — coal, gas or oil. The coal units, cast iron or steel, can be easily and quickly converted to firing with gas or oil, then back again to coal firing, if emergency demands.



There's a Rybolt heating unit to meet every home heating requirement of comfort, convenience, dependability and economy.

Write for details



THE RYBOLT HEATER COMPANY

315 MILLER STREET



ASHLAND, OHIO

Charging the Open-Hearth... from which will emerge highly refined iron, the base for all TONCAN IRON. To this base are added copper (twice as much as in copper-bearing steel) and molybdenum ... giving TONCAN IRON the highest rust-resistance of all ferrous materials in its price class.

For more than 40 years, TONCAN IRON has been proving its long life and low cost per year of trouble-free service in all kinds of sheet metal work. See Sweet's Architectural File or write us for the full story. Republic Steel Corporation, General Offices, Cleveland 1, Ohio. Export Department, Chrysler Building, New York 17, N.Y.



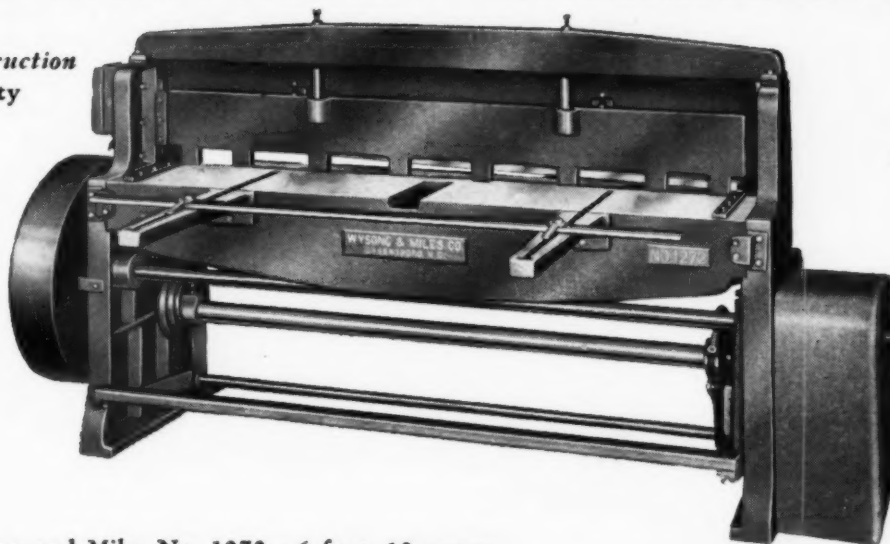
Republic

TONCAN COPPER MOLYBDENUM IRON

—for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods and other sheet metal applications requiring rust-resistance — and for corrugated metal drainage products.

Economical...CLEAN BURR-FREE SHEARING

Massive Construction
for Rigidity

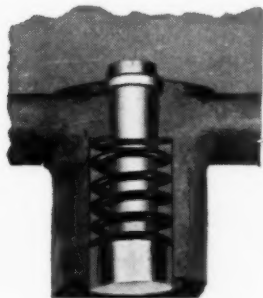


Hardened Steel
Sliding-key Clutch

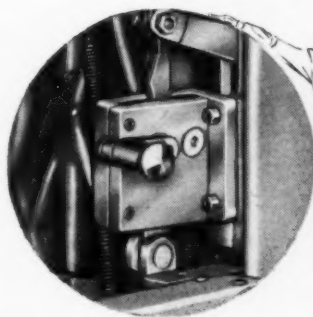


Wysong and Miles No. 1272—6 foot, 12 gauge

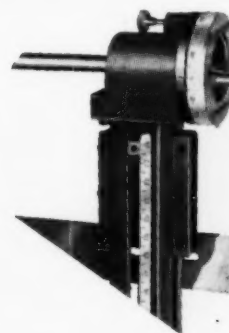
Compensating Action
of Each Holddown Foot



Non-Repeat Unit
for Safety



Precision Back Gauge
Adjustable to .0078 inch



PRECISION FEATURES INSURE SPEED AND ACCURACY

You'll get long, dependable performance from this finely engineered Wysong and Miles Power Squaring Shear. Built for economy, it has the precision features necessary for rapid, safe and accurate shearing in the production rush of today . . . operators are enthusiastic about the fine work done by this improved squaring shear, on the job in sheet metal plants throughout the country.

The parallel, ball-bearing back gauge can be quickly changed in units of .0078 (1/128th) of an inch by a handwheel dial

reading. The individual spring actuated plunger in each holddown foot acts as a powerful independent clamp . . . metals of varying gauges or narrow strips can be sheared without adjustment. The non-repeat unit of the positive hardened steel clutch stops shearing action after each cycle; or it can be set for continuous shearing. High speed blades are standard equipment. Other Wysong and Miles Power Squaring Shears in 8 foot, 12 gauge; 6 foot, 10 gauge; 6 foot, 14 gauge; and 52 inch, 14 gauge capacities.

Write for complete information on Wysong and Miles Sheet Metal Machines . . . Motorized, Air-Power and Foot-Power Squaring Shears; Power and Hand-Operated Bending Rolls; Combination Machines.

WYSONG and MILES CO

621 FULTON STREET GREENSBORO, NORTH CAROLINA

THE FINEST IN SQUARING SHEARS AND BENDING ROLLS

IT TAKES 2 ... FOR REAL WINTER AIR CONDITIONING
IT MAKES 2 ... PROFITS ON EVERY INSTALLATION



VIKING-HUMIDIFIER AND VIKING "QUI-ETTE" BLOWER

● Did you know that there are over 7,000,000 good gravity warm air furnaces which are waiting for heating dealers to convert to ideal Winter Air Conditioning units? That's right! So . . . Viking makes the job easy for you with its top-quality combination that will give you a two-way profit on every job. The Viking "Qui-ette" Blower is the easiest and quickest seller in the heating industry. Compare it with any Packaged Blower and you'll see why. As for the Humidifier, do you know of any model that has Viking's 9 outstanding features, including a top-seat float valve which any home owner can adjust?

● Use only the Viking combination for best results and bigger profits. Ask your jobber. He knows.

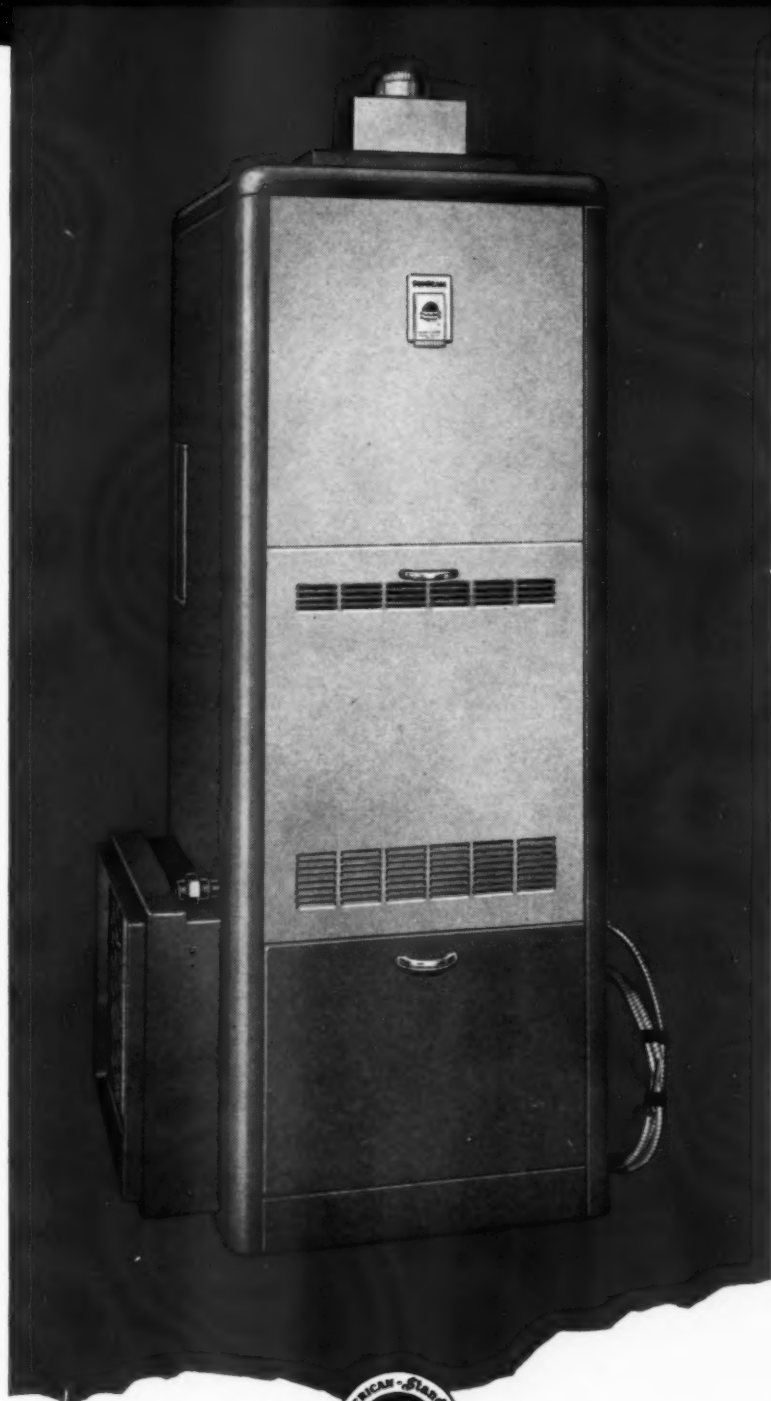
Viking

AIR CONDITIONING CORPORATION

5600 WALWORTH AVE. • CLEVELAND 2, OHIO

AMERICAN-Standard

First in heating...first in plumbing



The WYANDOTTE gas fired Winter Air Conditioner

Here's a fully automatic gas fired winter air conditioner you can sell for small homes with or without basements and for individual apartments. Its compact size (about 5 ft. high and less than 2 ft. wide) makes it ideal for first floor installation in utility rooms, kitchens or even closets.

Designed and engineered by experts, the WYANDOTTE with its corrosion-resisting steel heating element, smooth running blower and effective filters provides clean, efficient, low-cost, air-conditioned heat. And, because it is factory-assembled and wired, you will find it easy to install.

For detailed information about all the winter air conditioners and warm air furnaces in the American-Standard line, contact your Wholesale Distributor. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pa.

Here's the Ticket



here's the Line

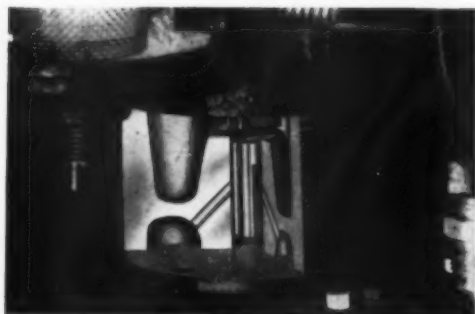
- to better business in '49!

When you sell American-Standard products you get all the selling aids you need to bring in more business. Ask your Wholesale Distributor for details of this powerful new advertising and merchandising program.

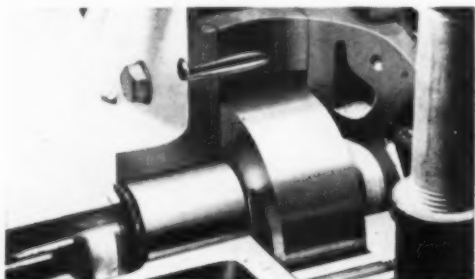
Look for this  Mark of Merit

Serving home and industry

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILER • ROSS HEATER • TONAWANDA IRON



1. The exclusive Winkler FUEL METER always delivers the same amount of oil, regardless of viscosity. Hence, the fuel-air ratio remains constant.

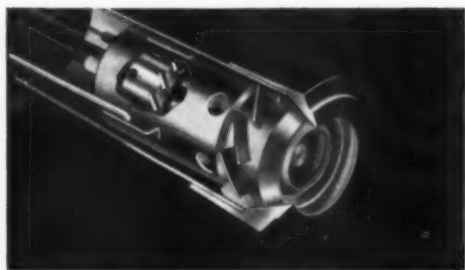


2. The exclusive FUEL AERATOR (a "Rollator" type pump) intimately mixes exact amounts of air and oil and forces this oil-saturated vapor to the nozzle.

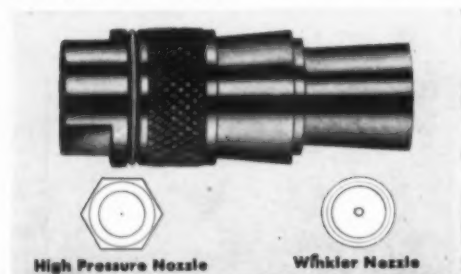


BURNS AS
LITTLE AS ½ GPH

WHY THE WINKLER *LP** MAKES NEW ECONOMY RECORDS!



3. The adjustable FLAME CONTROLLER delivers secondary air in 3 concentric zones, producing air patterns to suit exactly the capacity of the Fuel Meter.



4. The extremely large opening in the Winkler TURBA NOZZLE does not become clogged by dirt particles nor is the rate of oil flow through it affected by changes in viscosity.

A new approach to the science of oil combustion enables the Winkler LP* Burner to set an astonishing standard of economy and performance. This burner perfects low pressure operation—eliminates old service troubles and the extravagant waste of oil so common with conventional oil burners.

At left are shown a few of the design improvements which are exclusively Winkler developments. They are the reasons Winkler LP* Burners are selling at sight—to both new users and to present owners of oil burning equipment.

The Winkler LP* achieves its economy in four ways. It can be sized to burn as little as ½ GPH—ending oversizing waste in the small heating plant. It saves service expense because of its utter simplicity and clog-proof nozzle. It ends the inefficient short runs usual with oversized burners . . . and, it is not critical of oil.

Don't delay in getting your share of Winkler LP* profits—write today for full information on this burner you can sell now!



*LOW PRESSURE

This Winkler LP* Demonstrating Unit convinces prospects! Right in your own showroom it burns crankcase drainings—mixed oil and water—"hard-cracked" oil—heavy, unrefined oil . . . all without smoke or soot. An amazing proof of Winkler's superiority.

WINKLER

Automatic Heating Equipment

U. S. MACHINE CORPORATION
Dept. O-A2
Lebanon, Indiana

Use These 2 Simple P-K Fasteners

To Speed Your Work . . . Cut Your Costs!

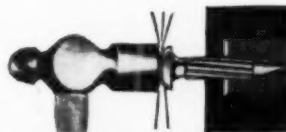
P-K SCREWNAILS have nail speed, screw strength



For fastening sheet metal to wood, use P-K Hardened Screwnails. They pierce metal that would bend ordinary nails . . . and they have over 4 times the holding power . . . will not work loose, back out or pull out. Because you can be sure they'll stay in once you drive them in, often fewer Screwnails are needed to do the job . . . an extra saving in labor and materials.



P-K MASONRY NAILS are easier, quicker, cheaper



For making secure fastenings to masonry, there's nothing simpler than P-K Hardened Masonry Nails. Just hammer them into the masonry, the same as you hammer an ordinary nail into wood. More quickly applied than lead anchors and expansion bolts, they hold securely and cost less. In comparatively soft masonry, P-K Masonry Nails can be driven without drilling holes.

Write for this free folder
(Form 412-B)



It gives complete details of P-K Screwnails and Masonry Nails, how and where to use them, with information on punches and masonry drill bits. SAMPLES, too, on request. Just tell us what you are fastening. Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

Sold Only Through Accredited Distributors

P-K
The Original

A TYPE AND SIZE FOR EVERY METAL AND PLASTIC ASSEMBLY



TYPE
"A"



TYPE
"Z"



HEX HEAD
TYPE "Z"



TYPE
"F"



TYPE
"U"



TYPE
"F-Z"



TYPE "Z"
PHILLIPS

PARKER-KALON SELF-TAPPING SCREWS

PARKER-KALON PRODUCTS

COLD-FORGED SOCKET SCREWS, WING NUTS, THUMB SCREWS • HARDENED SCREWNAILS AND MASONRY NAILS
SHUR-GRIP FILE AND SOLDER IRON HANDLES • METAL PUNCHES • DAMPER REGULATORS AND ACCESSORIES

AMAZING! NEW! LEXSUCO INSULATION CLIPS

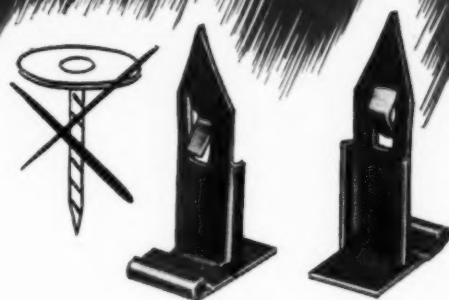
SAVE TIME! SPEED JOBS! CUT COST!

Fast, efficient, economical Lexsuco Insulation Clips represent one of the quickest, most satisfactory methods yet devised for the application of insulation to any sheet metal surface. Each clip consists of a sharply pointed, hardened and tempered steel shank, topped by a broad, flat head for easy driving. The slightly rounded shank provides penetrating strength and the sharp point will pierce any metal up to 18 gauge. The shoulders, cut into the edge of the shank prevent penetration beyond the thickness of the insulation. The special tongue, stamped into the shank, locks the clip securely into place. Tests have demonstrated that the holding power of Lexsuco clips is 4 times that of ordinary nails or drive screws.

No special tools are required. AN ORDINARY HAMMER IS THE ONLY TOOL NEEDED. Various lengths of clips accommodate all standard thicknesses of insulation up to 1 inch.

NO EXTRA COST! Lexsuco clips, installed, are exactly in line with the cost of standard nails or drive screws with tin caps and eliminate entirely the necessity for fitting caps to drive screws or nails.

Packed 500 to a box, 10 boxes to a 100 lb. carton. Available for immediate delivery.



**FOR INSULATED DUCT WORK,
AIR CONDITIONING EQUIP-
MENT, FURNACES, ETC.**



Lexsuco Insulation Clips work fast, require ONLY A HAMMER

Lexsuco clips are proving highly effective in the application of insulation to ducts, air conditioning equipment, sheet metal furnace surfaces and other like applications. Use of the clips eliminates entirely the necessity for pre-punching the metal, pre-fastening the insulation sheet by wiring and putting the caps on nails. Mechanics place and fasten the sheet in a single operation, holding the sheet in place on the duct, pushing the clips into the insulation at the proper points and driving them home with a single hammer blow.

Lexsuco clips are thus applied several times faster than drive screws or simplex nails. Insertion of the clips with the edge toward the air flow reduces obstruction to a minimum and eliminates, almost entirely, turbulence and air leakage.

LEXSUCO FASTENETS

Here's the famous Lexsuco Insulation Fastener designed for use on wood surfaces. Note the same slightly curved, sharply pointed shank. Note the sturdy, one-piece construction. Fastenets have a holding power, under tests, of several times that of ordinary nails. Fastenets provide the fast, sure, low-cost modern method of applying insulation, insulating sheathing, asphalt shingles, roll roofing, plaster board, metal lath and many other materials to wood deck, sheathing, studding and all other wood surfaces.

Packed 500 to a box, 10 boxes to a 100 lb. carton.



DISTRIBUTORS

Get samples, details and prices now. Get in touch with the nearest distributor or write direct to us:—

THE PALMER-DONAVIN MFG. CO.
Columbus 8, Ohio

PINTHER WHOLESALE CO. INC.
Madison, Wisc.

STANDARD WHOLESALE SUPPLY CO.
Detroit, Mich.

VORY'S BROS. INC.
Columbus, Ohio

CASSADY-PIERCE CO.
Pittsburgh, Pa.

O'CONNOR STEEL CO.
Akron, Ohio

EDWARD R. HART CO.
Canton, Ohio

ONEIDA SUPPLY CO.
Toledo, Ohio

ALBURSON SUPPLY CO.
Cincinnati, Ohio

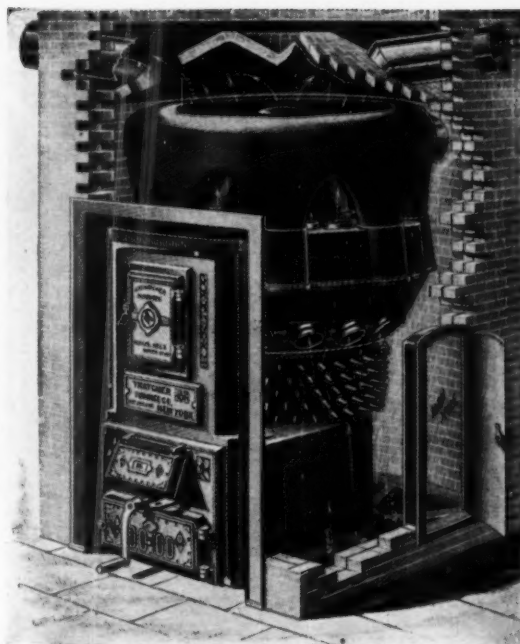
NATIONAL CONSTRUCTION
SPECIALTIES CO.
Detroit, Mich.



The LEXINGTON SUPPLY CO.
4815 LEXINGTON AVE CLEVELAND 3 OHIO



1. Seven room home at 28 Pommer Ave., Stapleton, S. I., built in 1905 by Mr. Arthur Willshaw, heating contractor . . . Thatcher Tubular Furnace sold by Mr. Louis Thatcher, son of the founder of the Thatcher Furnace Company.



thatcher dependability makes sales easy

Every homeowner wants this kind of dependability. Specify Thatcher and make sure they get it. Every Thatcher is backed by 98 years of heating experience. That's why you sell *more*, and sell more *easily* when you work with Thatcher, your warm friend since 1850.

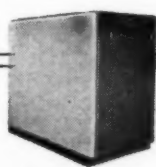


GARWOOD, NEW JERSEY

2. Type of Thatcher Tubular which after 42 years of comfortable heating was still in perfect working order, still had original grates. Nevertheless, Mr. Willshaw decided it had served its time—wanted to modernize.



3. Mr. Howard Robinson, West Brighton, S. I., replaced the old Thatcher Tubular with a new Thatcher Thermaster. He told us, "after the proven dependability of the original Thatcher Tubular, Mr. Willshaw would have nothing but a Thatcher to replace it."



Comfortmaster
Oil-Fired
Air Conditioner



Comfortmaster
Gas-Fired
Air Conditioner



Triple-Fire
All-Purpose
Boiler



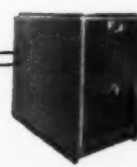
Oil Master
Automatic
Oil-Fired Boiler



Thermaster
Gravity
Furnace



New 550
Oil-Fired
Air Conditioner



New A-204
Oil-Fired
Air Conditioner

Convector HUMIDIFIERS



Also Built
for Sloping
Plenums —
Adjustable to 30°

with "Flash
Action"

Better Deal for Customers... MORE MONEY for YOU

★ Handle Maid-O'-Mist Convectors and you can "lick" competition two ways: *superior performance and attractive price.*

★ Yes, here's a fast-moving, profitable line.

★ Convectors are ideal for modern warm air furnaces with thermostatic control.

★ Convectors alone have "FLASH ACTION"—vaporize water nine times faster—30% more evaporative area—60% less restriction of air flow—adequate humidity at all times.

★ Convectors come to you completely assembled—and because of our patented self-locking front plate, they take 50% less time to install.

★ Give your customers a better deal—be able to GUARANTEE first-class results!

★ Check with your jobber or write us. You can make many extra dollars as a Maid-O'-Mist dealer in 1949.

MAID-O'-MIST INC.

3213 N. PULASKI RD.
CHICAGO 41, ILLINOIS



5900-F



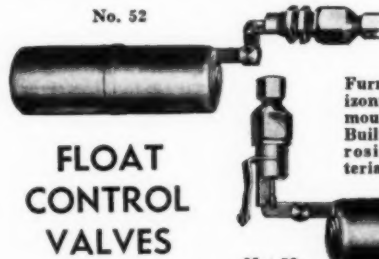
National Plumbing
Laboratory
Approved Against
Back-Siphonage



COMPLETE FLOAT VALVE AND RESERVOIR ASSEMBLY

This complete unit enables you to convert any hand-fed pan into an automatic humidifier. Easily and quickly installed. Thumb screw adjustment permits control of water line. Shipped with all necessary fittings and instructions. A first-class, dependable outfit; corrosion-resisting brass and copper construction. Priced right to make you a liberal profit.

No. 52



FLOAT CONTROL VALVES

Furnished either horizontally or vertically mounted as shown. Built entirely of corrosion-resisting materials.

No. 53

World's finest automatic valves for controlling water level in humidifiers, air conditioners, evaporative coolers, air washers, etc. Easy thumb screw adjustment permits raising or lowering water line as required. Take exceptionally small space. Quickly installed. Capacity sizes from 1 qt. to 1½ gals. per min. Pressures up to 125 lbs.

AUXILIARY VALVES

Saddle Valves (No. 8) for ½" and ¾" iron pipe. Each consists of machined brass forging with insert tube to fit ¼" hole, and with brass wheel handle. Needle Valves (No. 816) control water supply to humidifier and feed valves.



No. 816

No. 8

Now...

*Top Quality Motors Available
in Quantity*



PACKARD SUNLIGHT MOTORS

PACKARD SUNLIGHT MOTORS

for
compressors
washing machines
power-driven
bench tools
ironers
milk separators
milking machines
furnace blowers
stokers
oil burners
water pumps
ventilators
and many other
applications

Increased availability of Packard Sunlight Motors means increased opportunity for you to build lasting consumer satisfaction into your motor-driven appliances and equipment. A new plant and new production facilities assure a steady supply of these dependable, efficient power units for both new and old customers. Profit now from the value, the trade acceptance, the prestige that Packard Sunlight Fractional Horsepower Motors will give your products.

Packard
REG. U. S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

Insure Your Years Ahead

with MONCRIEFS "YEARS AHEAD"

Heating Equipment!

FOR over 55 Years Moncrief Dealers have insured their "Years Ahead" with Moncrief's "Years Ahead" heating equipment.

Staying "Years Ahead," with the smartest, the most distinctive, eye-appealing line of heating units in Moncrief's history again insures your "Years Ahead."

The "Aristocrats" in cabinet design are featured throughout the entire line. All models are beautifully finished in harmonious baked enamel colors that will fit into any decorative heating scheme.

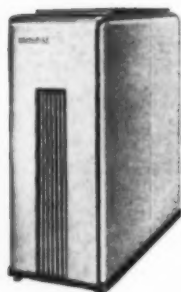
All cabinets are beautiful, symmetrical units—are quick and easy to assemble—they're die-formed.

All cabinets are more substantial than most heating cabinets—they're made from a heavier gauge of steel.

Wherever or whatever the demand may be—a coal—a gas or an oil job . . . a gravity or forced air job—there's a Moncrief with "Years Ahead" features that fits the demand.



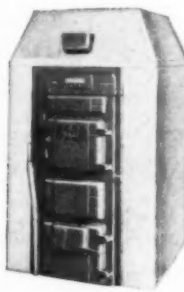
SERIES AC-700-F
Coal-Fired, Steel,
Air Conditioning
Unit.



SERIES L
Gas-Fired, Steel, Air
Conditioning Unit.



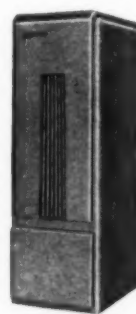
SERIES U
Gas-Fired, Steel, Utility
Air Conditioning Unit.



SERIES 700
Coal-Fired, Steel,
Gravity Furnace.



SERIES C
Coal-Fired, Cast Iron,
Gravity Furnace.



SERIES CU
Gas-Fired, Cast Iron, Utility
Air Conditioning Unit.



SERIES CL
Gas-Fired, Cast
Iron, Air Condition-
ing Unit.



SERIES V
Vaporizing, Oil-Fired, Steel
Air Conditioning Unit. Also
available in Utility Unit,
and Gravity Furnace.



SERIES W
Gas-Fired, Steel,
Gravity Furnace.



SERIES P
Gun, Oil-Fired, Steel,
Air Conditioning Unit.

THE HENRY FURNACE COMPANY

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

MONCRIEF

SINCE 1895

FURNACE PIPE AND FITTINGS

for volume production...



WEIRTON

COLD-ROLLED STRIP

The use of Weirton cold-rolled strip steel can be a big factor in maintaining high volume at low cost in the making of countless articles or parts. Its exceptional drawing and forming qualities speed up and simplify production. Costs are cut because spoilage and scrap losses and tool expense are reduced. Plant efficiency and product efficiency are improved through standardization on Weirton cold-rolled strip steel.

WEIRTON STEEL CO.

WEIRTON, W. VA., Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION, Executive Offices, Pittsburgh, Pennsylvania



NIAGARA

Presents America's Newest and Finest

16 GAGE FOOT SHEAR

Featuring

Capacity greater
than ever before

Welded steel
strength and
rigidity

Formed steel
throughout

Automatic
holddown

Heavy duty bronze ways

Clean straight cuts

Easy operation — lively action

Portable

30, 36 and 42" cutting lengths



**NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.
DISTRICT OFFICES: NEW YORK, CLEVELAND, DETROIT**

st

5

Y.
IT

--- on cutting fuel bills in Half



During New England's severe winter of 1947-8, the J. C. Corrigan Company, Inc., of Dorchester, Mass., cut its fuel bill nearly 50% by installing a DRAVO Counterflo Heater. Coal for the previous winter season had cost this company between \$1100.00 and \$1200.00, whereas only \$652.00 was spent for oil to fuel the DRAVO Heater during a similar period.

Besides fuel savings, the maintenance expense for the old heating system was practically eliminated because the DRAVO Heater operates automatically by thermostatic control. "Even more important" says J. C. Corrigan, President, "... part of our substantial increase in production this winter was due to the improved heating system."

Employees in the Corrigan plant manufacture custom-built conveying systems and need adequate warmth for efficient fitting and assembling. Previously, the plant was heated by a coal burning furnace using blowers and ductwork to distribute the warm air. Excessive roof heat losses in this 165' x 70' x 27' building, prevented it from being comfortable. To heat "cold spots" that developed, eight pot-bellied stoves were installed. Maintenance of this old heating method required three hours labor every day. Coal and ashes had to be hauled through the heart of the busy plant. Even with the eight stoves to supplement

the coal-fired furnace, heat was inadequate and employees spent valuable production time huddling around the stoves.

In November 1947, one DRAVO Counterflo Heater with an output capacity of 2,000,000 Btu was installed. No ductwork was needed. Only fuel and power lines had to be connected and a vent stack installed. Now the entire factory area is maintained at the proper degree of warmth for workers' comfort and efficient production. During sub-zero weather last winter, the single DRAVO Heater delivered enough heat within 20 minutes after it was turned on to satisfy the thermostat's setting. Moreover, the DRAVO Heater is shut down to conserve fuel during non-working hours, whereas the coal furnace had to be fed over weekends while the plant was not in operation to maintain some warmth for the Monday morning shift.

DRAVO Counterflo Heaters burn oil, gas or coal. Units burning non-solid fuels can be converted from one fuel to another very readily. Coal-fired heaters can be converted for burning gas or oil.

You may also have a problem like Corrigan's—or one more complex. Write us for information and the name of our nearest representative. DRAVO CORPORATION, Heating Section, Dravo Bldg., Fifth and Liberty Avenues, Pittsburgh 22, Pa.

DRAVO

C O R P O R A T I O N



Pittsburgh • Cleveland • Philadelphia • Detroit
New York • Chicago • Atlanta • Boston
Sales Representatives in Principal Cities

5 FUNCTION HEATING

with JUST ONE UNIT!



DRAVO CORPORATION, Heating Section, Room 812-2

Dravo Bldg., Fifth and Liberty Avenues, Pittsburgh 22, Pa.

3 We would like to consider DRAVO Counterflo Heaters for:

Name..... ☐ Comfort Heating
Title..... ☐ Year 'round Ventilating
Company..... ☐ Process Drying
Address..... ☐ Tempering Make-up Air
City and State..... ☐ Heat Curing

P-6301

You Can Depend On
This Great New Line of

DELCO MOTORS

*for Smooth,
Dependable Power*



ESPECIALLY DEVELOPED FOR REFRIGERATION AND BLOWER EQUIPMENT

Here is a complete line of Delco Motors developed especially to meet the requirements of refrigeration and blower equipment. These dependable Delco Motors deliver smooth, quiet power hour after hour, day after day.

The simple, compact design and rugged construction of these Delco Motors assure long, dependable service. Self-ventilation and highest quality insulation mean trouble-free operation. Ample lubrication is provided by the seal and shield type ball bearing . . . all internal moving parts are permanently protected by the rugged cast iron frame.

Yes, the Delco line of Refrigerator and Blower Motors is designed and engineered to do a better, more efficient job of powering your products. Write to Delco Products, Dayton, Ohio, or our nearest Sales Office for complete details.

CHECK THESE FEATURES OF THE NEW DELCO MOTOR

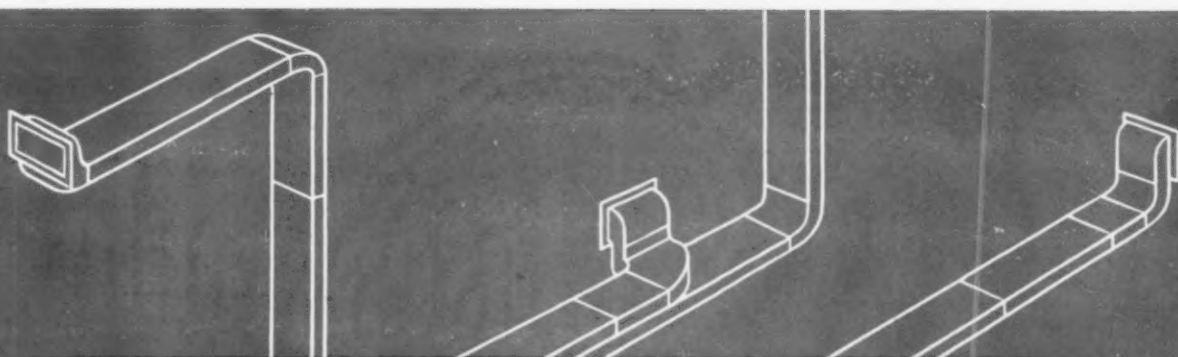
- ✓ The inner and outer races of the ball bearing on the end opposite the drive end are locked to give maximum thrust capacity.
- ✓ Polyphase motors have double squirrel cage rotors; die cast aluminum conductor bars and end rings.
- ✓ Close tolerance air gap between rotor and stator.
- ✓ Main frames, end frames of rigid cast iron construction.
- ✓ Extended accessible mounting feet cast as unit with main frame.
- ✓ Single phase available from 1 h.p. through 5 h.p. and polyphase available from 1 h.p. through 7½ h.p., 1800 R.P.M.



DELCO MOTORS

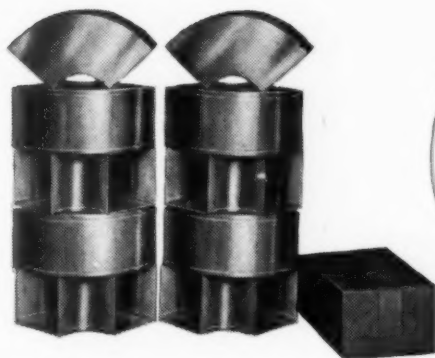
DELCO PRODUCTS, DIVISION OF GENERAL MOTORS CORPORATION

SALES OFFICES: CHICAGO • CINCINNATI • CLEVELAND • DETROIT • HARTFORD

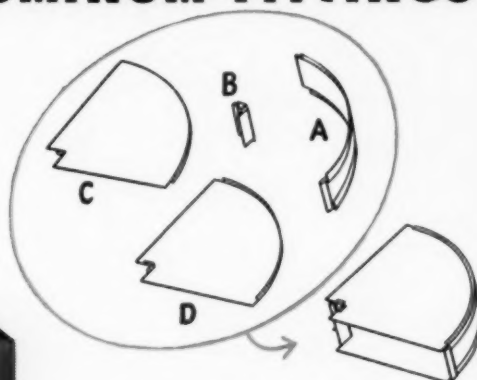


Easy does it

"EASY-FIT" ALUMINUM FITTINGS



Easy to Stock! 10 Easy-Fit 90° Horizontal Elbows shown above come packed in space-saving carton on right. Save up to 75% on your fitting storage space.



Easy to Assemble! All parts furnished to complete 90° Horizontal Elbow as shown. Open Pittsburghs are formed on Heel (A) and Throat (B)—Flanges are turned on cheeks C and D. Fit your parts together, close Pittsburghs with mallet, and you have your 90° elbow ready for use.

"Easy-Fit" Fittings available for complete duct work: Trunk Duct, Wall Stack, Transitions • 45° Vertical and Horizontal Angles • 90° Vertical and Horizontal Angles • Horizontal and Vertical Stack-heads • Top and Horizontal Trunk Takeoffs • Drive, S and Plenum Clips • Collar Connectors, Registers and Grilles • Bending Tools.

EXTRA PROFIT IS YOURS WITH "EASY-FIT" precision tooled light-weight Aluminum fittings. No scrap or waste—do more jobs at no cost increase. Standardized sizes conform to National Warm Air Heating and Air Conditioning Association

codes. All these advantages, plus a neat, economical, finished job, mean good news to contractors who have felt the pinch of metal shortage or the rising cost of duct installation. Write today for full details, using coupon below.

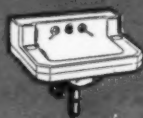


RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.



For dependable Winter Air Conditioning units, either oil or gas, specify or install Richmond.



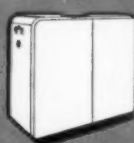
Vitreous China



Gas Boilers



Enameled Cast Iron Wares



Winter Air Conditioners
Gas—Cast Iron or Steel
Oil—Steel

MAIL COUPON TODAY

AA-2

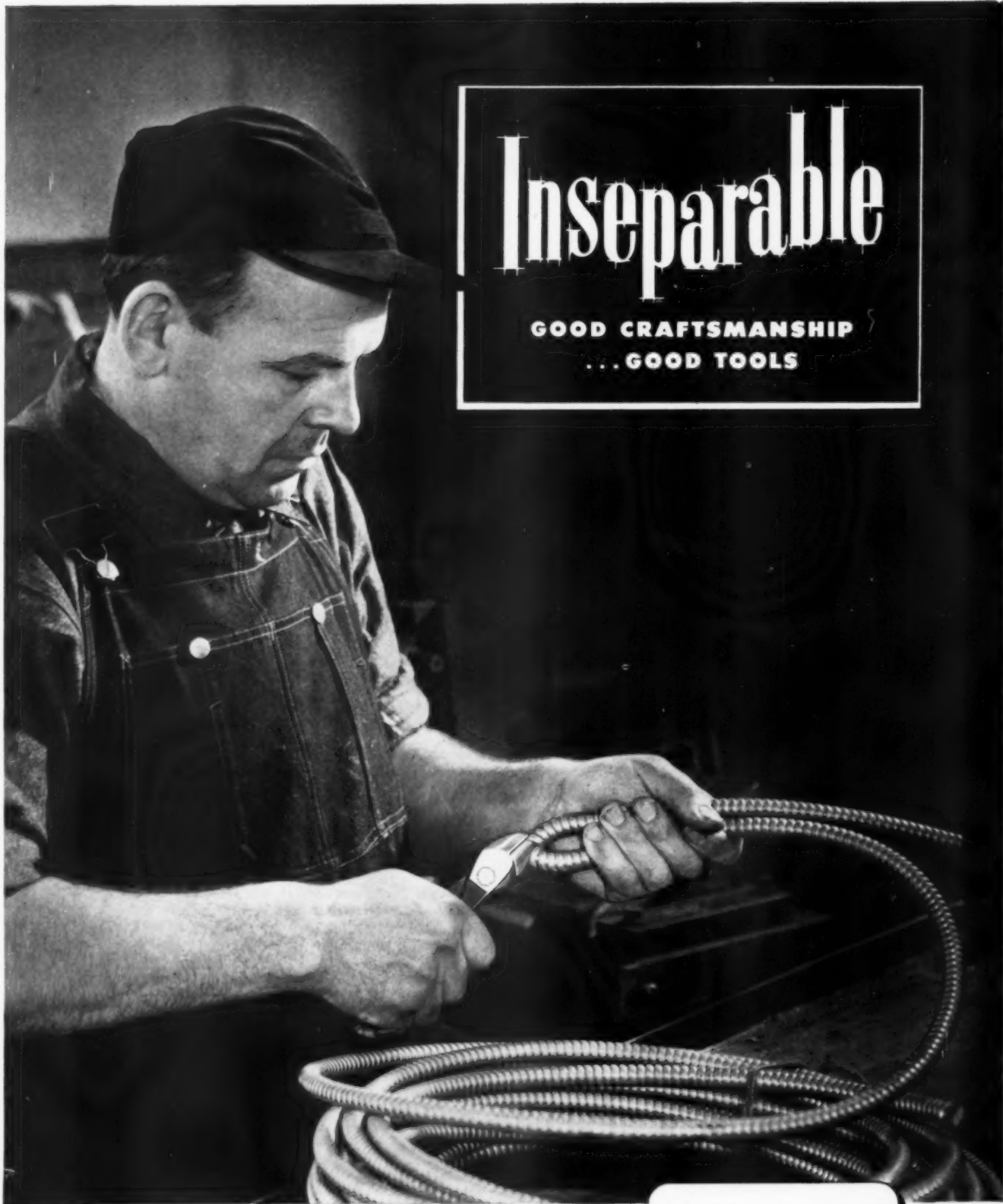
Richmond Radiator Company
19 East 47th Street, New York 17, N. Y.

I am interested in further information on "Easy-Fit" Aluminum Fittings. Please send me latest catalog, no obligations, of course.

Name

Company

Address

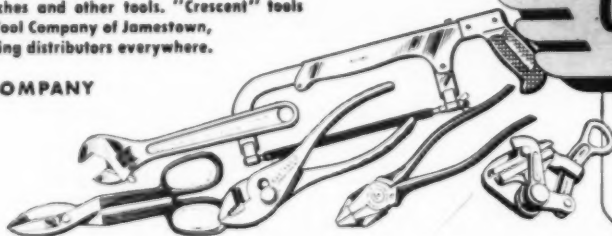


Inseparable

GOOD CRAFTSMANSHIP
...GOOD TOOLS

"CRESCENT" is our trade-mark registered in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N. Y., and are sold by leading distributors everywhere.

CRESCENT TOOL COMPANY
Jamestown, N. Y.



CRESCENT TOOLS

*Sign of the Artisan
Symbol of Excellence*

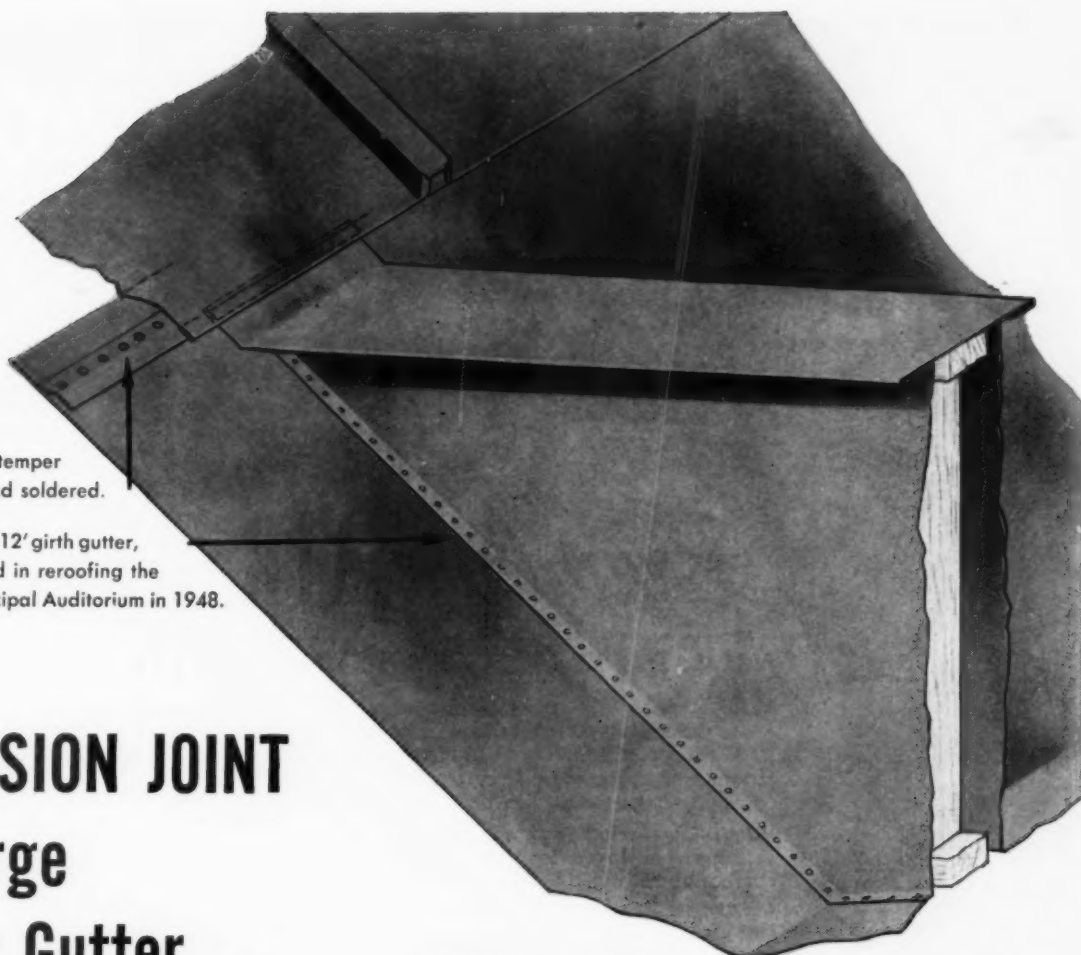
32 ounce cornice temper copper, riveted and soldered.

Expansion joint for 12' girth gutter, similar to that used in reroofing the Philadelphia Municipal Auditorium in 1948.

EXPANSION JOINT for Large Copper Gutter...

THE ABOVE DRAWING shows a method of construction for a giant expansion joint—similar to the ones installed when the Philadelphia Municipal Auditorium was reroofed last year with 90,000 square feet of Anaconda Sheet Copper. At this Philadelphia building, the 12 foot girth built-in bulk-head type gutters and expansion joints are made from 32 ounce copper, cornice temper, with lap seams riveted (with explosive brass rivets) and soldered.

Such joints installed in gutters of this size and design provide suitable allowance for expansion and contraction of the metal. Careful attention to construction details, such as this example, contributes to the extremely long life and maintenance-free service of copper work. The uniform quality and workability of Anaconda Copper makes it easy for craftsmen to follow accepted methods of fabrication in the shop and installation on the job. Consult our Engineering Department on roofing or other sheet metal problems involving copper or copper alloys. 4001



Section of built-in copper gutter at the Philadelphia Municipal Auditorium. Expansion joints can be seen in the background. The 12 foot girth of the gutter is lined with 32 ounce copper, cornice temper, with seams riveted and soldered.

ANACONDA
From mine to consumer
Anaconda
COPPER

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.
New Toronto, Ont.

THE HIT OF THE SHOW!

200 SERIES

300 SERIES

P SERIES

Brundage AIR-RENEWER

HUMIDIFIES...CLEANS...PURIFIES...CIRCULATES

More business — Greater profits for you — be the first in your territory to handle it. Gain prestige with this completely automatic, trouble-free, self-adjusting, compact, space-saving unit.

HUMIDITY — triethylene glycol-water solution is employed to give scientifically correct humidity.

CLEANING — all impurities (dust, dirt, lint and other foreign particles) are lost to the dirt disintegrating glycol.

PURIFICATION AND STERILIZATION — it is the only equipment on the market func-

tionally designed to incorporate the latest development in powerful germicidal lamps . . . that instantly kill air-borne bacteria.

CIRCULATION — oversize, quiet Brundage blower insures correct air motion.

All this is accomplished in a unit that reflects the master craftsmanship of thirty years of engineering and manufacturing skill. If you were unable to attend the show . . . if you missed seeing it in operation . . . information available on request.

WRITE FOR
LITERATURE

**Brundage
COMPANY**

Blower Specialists
Since 1919
600 NORTH PARK STREET
KALAMAZOO 11, MICHIGAN

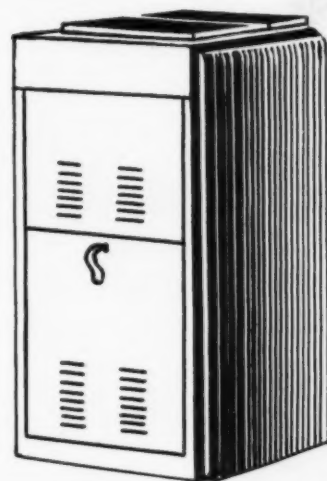
400 SERIES

T SERIES

1900

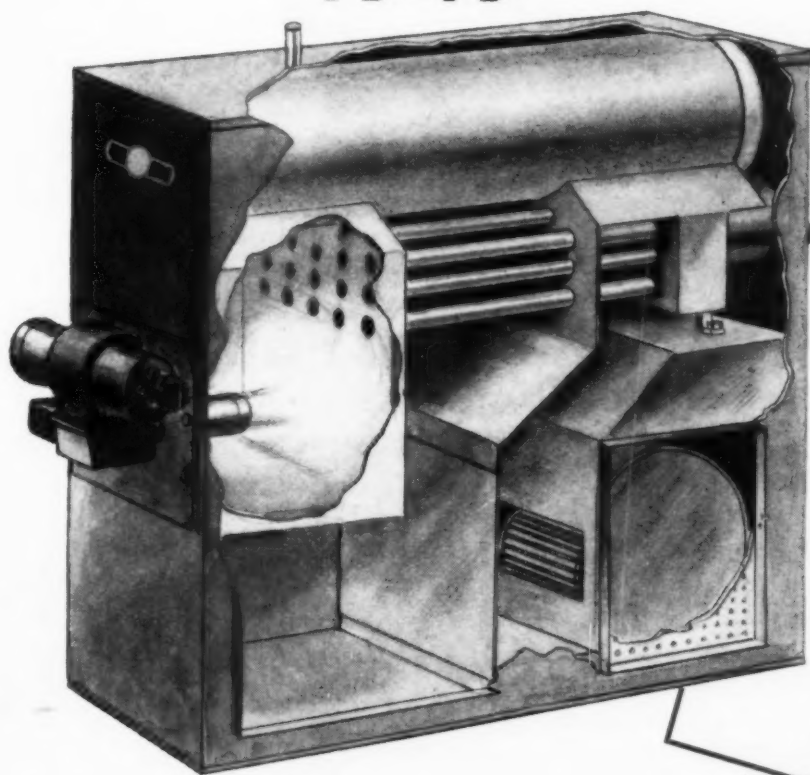


1930



Progress

1949



A Modern Steel Forced Warm
Air Furnace That Provides
**Year-Round
Hot Water**

Complete With Gun
Type Oil Burner,
Humidifier, Filters
and Copper or Mo-
nel Hot Water Stor-
age Tank.

METROPAC—A DECADE AHEAD OF THE BEST!

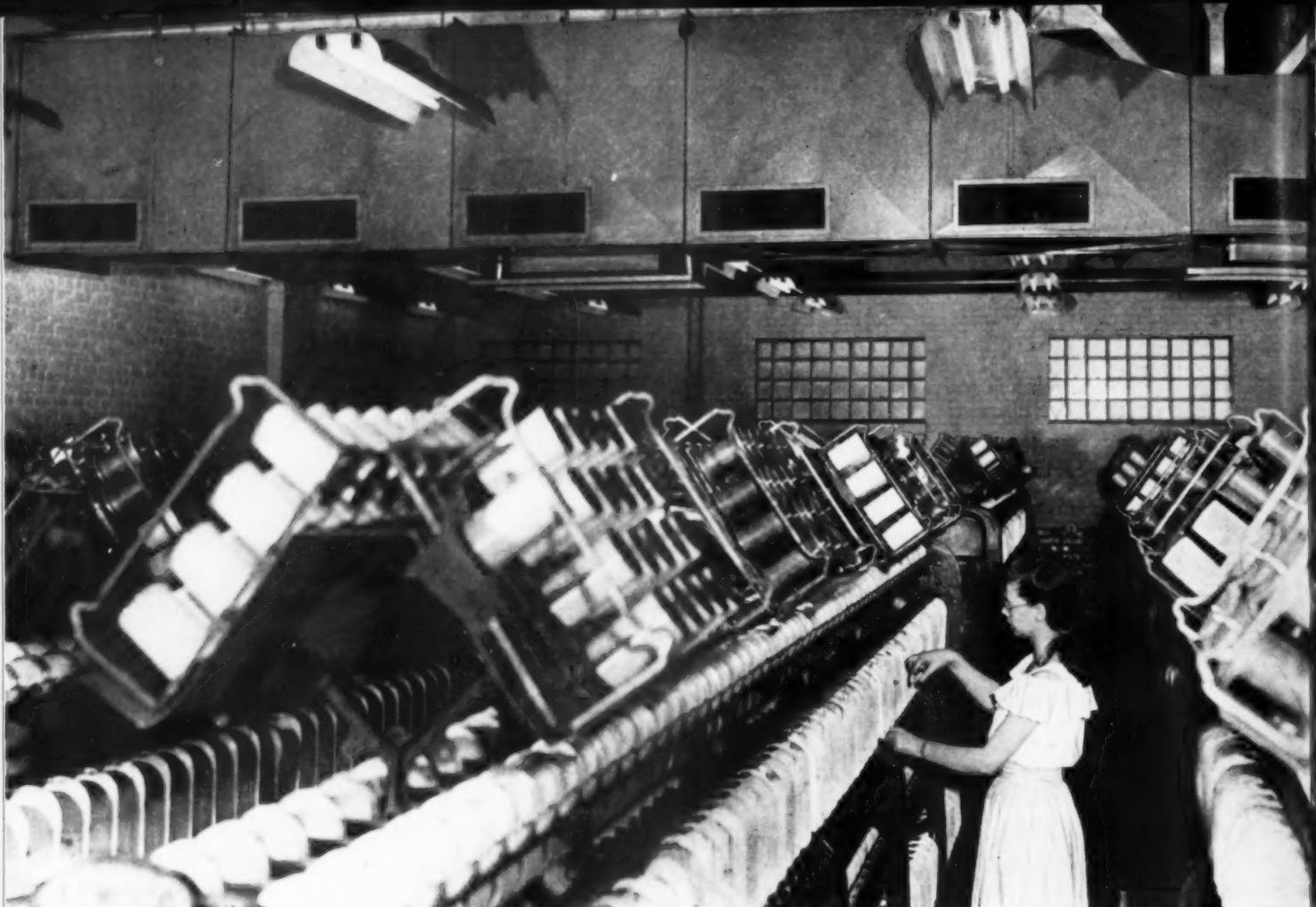
U.S. Patent No. 2212222

► ► ► Write Today

REMEMBER— YEAR 'ROUND HOT WATER
A FIRE TUBE STEEL FORCED WARM AIR FURNACE WHICH PROVIDES
HIGHER EFFICIENCY — SUMMER AIR CIRCULATION

METROMATIC MFG. CO.

EVERETT, MASS.



Controlled temperature and humidity of the air help reduce the breakage of fibres in this modern twisting room.

Air-Conditioning takes the snarl out of silk

In modern textile mills where silk or synthetic materials are spun into yarn, humidity control is an important factor. The web-like fibres respond sensitively to the surrounding air, becoming soggy when humidity is high and brittle when it is low. Either of these conditions can cause the yarn to foul-up or break on the fast-spinning bobbins.

In fully air-conditioned plants like that of Leon-Ferenbach, Inc., Johnson City, Tenn., losses from poor-running yarn are held to the minimum and quality is maintained at a high level. Here a Carrier central-station system delivers air of the required humidity and temperature to all departments.

The ducts in this plant and those in countless other textile mills are made from Beth-Cu-Loy Galvanized Steel Sheets. The wide popularity of these sheets in the field of industrial air-conditioning is due primarily to their excellent resistance to rust, their good workability, and their economy.

If you are a sheet-metal contractor who handles duct-work for any type of air-conditioning or heating it will pay you to keep the Beth-Cu-Loy name in mind.



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

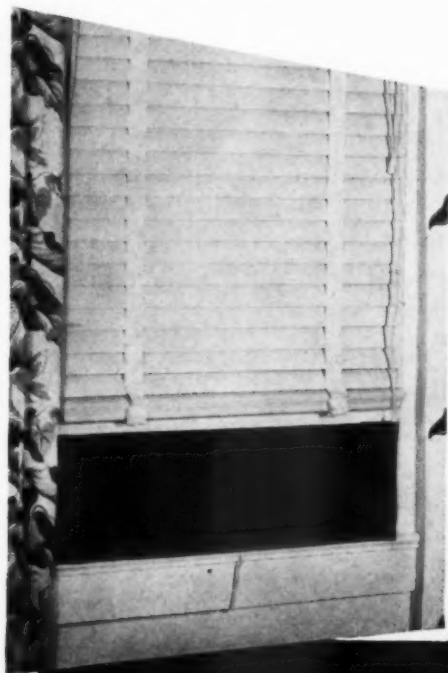
Export Distributor: Bethlehem Steel Export Corporation



Air-conditioning enables these machines to maintain tolerances of two-tenths of 1 per cent in applying sizing coats to yarn.



and Remember: **COMFORT** produces **Quality COOLERS** to meet your every residential or industrial need



● **COMFORT AIR WASHERS:** "The King of Coolers" in 4 generous sizes; 3500 to 10,000 cfm capacity. Deliver greatest volume of fresh cooled, filtered, washed air at **lowest possible cost.**

● **EVAPORATIVE COOLERS:** for lower cost cooling. Four models include two fan-type window coolers for use with and without city water connection. Large blower type with 3500 cfm delivery.

and the Hit of 1949—

Amazing new **BLOWER TYPE WINDOW MODEL**—requiring but **8 inches** inside window space. 2000 cfm capacity.

COMFORT'S THE KEY to: *Greater Profits • Trouble-Free Cooling • Satisfied Customers • Better Living*

WRITE for full information regarding the new Comfort line and special sales and advertising ideas.

COMFORT PRODUCTS CORP.
2220 LAMESA • DALLAS, TEXAS



Hoot, Mon

'TIS TIME YE HAD A SHARE OF

COROAIRE PROFITS



COROAIRE CONSOLE—A complete winter air conditioning system designed for small homes, commercial and replacement installations.



THE REVOLUTIONARY PATENTED COROAIRE CAST IRON VENTURI TUBE HEAT EXCHANGER—Heart of every Coroaire

5 times greater radiating surface
5 times longer flue travel
100% wiping action



A FACTORY ASSEMBLED AND PACKAGED WINTER AIR CONDITIONING FURNACE—complete, ready for installation.

POST WAR
DEVELOPMENT-
REVOLUTIONARY

PATENTED
EXCLUSIVE
FEATURES!

UNUSUAL
CONSUMER-
ACCEPTANCE-
ASSURED
PRESTIGE!

COMPACT!
PACKAGED!

25% TO 50%
MORE
EFFICIENT

Sell COROAIRE—Profit Leader—Economy Leader.

PATENTED EXCLUSIVE FEATURES—The exclusive Venturi tube.

SHIPPED ASSEMBLED COMPLETE—Less time to install—tested under fire at factory.

PROVEN RECORD—Thousands installed since the war, in large new-home projects, individual dwellings, apartments and commercial buildings.

ECONOMY AND EFFICIENCY—Heating bills reduced as much as 50%.

NATIONAL RECOGNITION—Endorsed by recognized heating authorities and builders.

PRICED RIGHT—Install top quality at no extra cost—generous profit margin for you.

Get your share of these profits. Write Now!

For complete franchise details address inquiries to:

THE COROAIRE HEATER CORPORATION

1422 Euclid Ave. • Cleveland 15, Ohio

FIRST in the Industry



COROAIRE

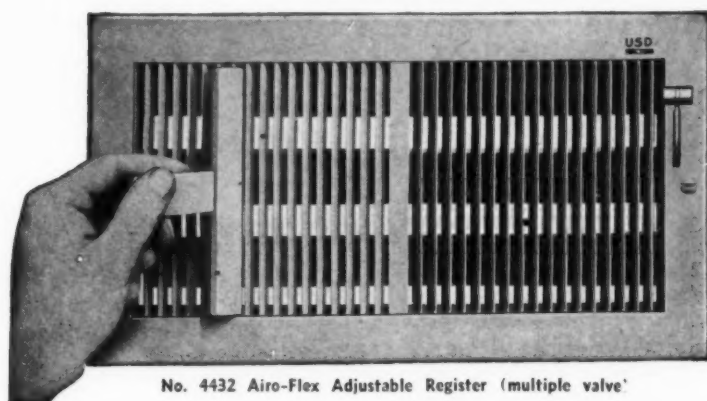
*The Hottest Line
for '49*

The Economical

Auer

4-WAY

AIRO-FLEX "4400" Series Registers



No. 4432 Airo-Flex Adjustable Register (multiple valve)

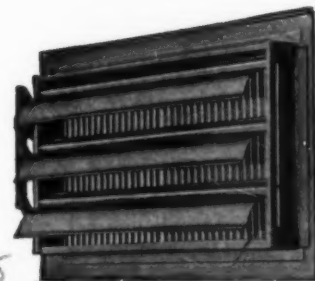
*Adjustable for
Right or Left
also Up & Down
Directional Flow*

Recent sales figures show this popular "4400" Series air conditioning register to be more in demand than ever before. Apparently many contractors are finding this Auer multiple valve model economical enough to use on jobs where, previously, they would have installed single louvre registers. In the Airo-Flex "4400" you have a genuinely fine quality register, neatly turned out, smoothly operating, 4-way directional, yet moderately priced. The entire design and working mechanism have been kept as simple as possible.

This Airo-Flex has horizontal multi-valve deflecting blades governing up-and-down flow. Setting of blades is shown by indicator on face. Sturdy vertical fins on face are also easily adjusted to desired right or left angles, with turning tool. This is an outstanding value in a 4-way register and can be used with pride on any job.

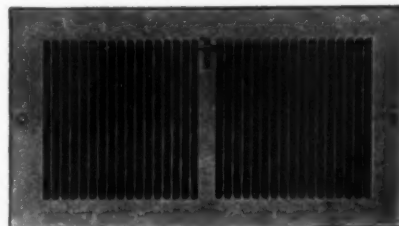
The same design face is available in the "4000" line, with single valve, for right or left flow, as shown below, and also in the "7000" series, with horizontal fins.

Auer makes a complete line of high grade registers for all your gravity or air conditioning needs. Auer Register Book (or special Catalog "C" on flat stamped metal Grilles) mailed on request.



Back view of
Airo-Flex
No. 4432 Register

No. 4032



Auer

REGISTERS

& GRILLES for AIR CONDITIONING & GRAVITY

THE AUER REGISTER CO., 3608 PAYNE AVENUE, CLEVELAND 14, OHIO

AMERICAN ARTISAN, February, 1949

Equip with **THERMO-DRIP** Automatic Humidifiers

**CHECK
THESE
PREMIUM
FEATURES... THAT
COME AT NO EXTRA COST**

- ★ Drip Feed Principle creates balanced atmosphere
- ★ Hot pan surface gives immediate vaporization
- ★ No stagnant pool of water left in pan
- ★ Fingertip adjustment to any degree of humidity
- ★ Easy to clean
- ★ No electrolytic action
- ★ Valve movement prevents clogging by lime
- ★ Easy to install — fits all types of furnaces



**THERMO-DRIP PANS
ARE RUST RESISTANT
CORROSION PROOF
LONG-LIFED**

Even with hardest water, precision-engineered **Thermo-Drip** pans last longer, give better vaporization. The smooth surface of **Thermo-Drip** pans prevents non-porous deposits and lime deposits from clinging to bottom and sides, allows easy cleaning.

Thermo-Drip pans are made of stainless steel. The metal is special-drawn—very thin—for FASTEST HEAT CONDUCTION. This rapid heat transfer makes possible immediate vaporization of each drop of water as it strikes the sizzling hot pan.

The thermostat quickly and automatically adjusts to temperature fluctuations, so that water does not accumulate or stand in pan. Thus, scum cannot form on the surface of the water to slow down evaporation.

Thermo-Drip Automatic Humidifiers are used the nation over, are recognized by furnace men everywhere as first choice because of the super-efficient humidifying job which they do and keep on doing year after year.

Write for free catalog today. Dept. A-2

Automatic
HUMIDIFIER CO.
CEDAR FALLS, IOWA

here it is!

the GILBARCO SPACE-SAVER

A new Winter Air Conditioner for Modern Homes

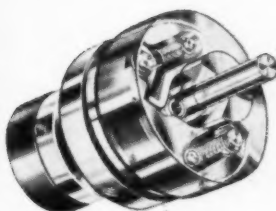


View of SPACE-SAVER showing accessibility of burner and controls. Air is cleaned as it passes through viscous-coated filters. Humidifier for duct installation is furnished as standard equipment.

Here's the ideal heating unit for the modern home with limited space. It's *quiet!* It's *modern!* It's a packaged unit, ready to install ... requiring only 3½ sq. ft. of floor space, exclusive of duct work.

SAVES INSTALLATION COSTS—The burner and combustion safety control are mounted and wired at the factory, the combustion chamber is in position and the blower is mounted and wired.

SAVES FUEL—THE GILBARCO SPACE-SAVER features the famous Gilbarco GCS automatic, pressure-atomizing-type oil burner with the exclusive, fuel-saving *Economy Clutch*. This, combined with a quick heating, stainless steel combustion chamber and a counter-flow method of heat transfer, produces outstanding economy of operation.



The Exclusive Economy Clutch reduces heat-wasting soot by starting burner fan before combustion and continuing fan operation several seconds after combustion has ceased.

FAST SELLER—With a capacity of 100,000 BTU per hour THE GILBARCO SPACE-SAVER taps a vast new market for oil-fired heating units. It's tailor-made for the millions of small homes that are being built with small utility rooms instead of basements. Also summer homes and camps for year-round enjoyment.

DON'T MISS the big profit opportunities of this amazing new unit. Some franchises are available west of the Appalachians. Write for full information today.

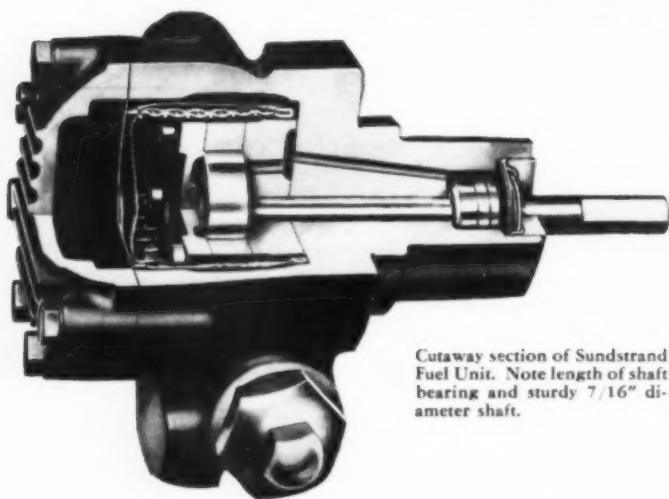
Gilbarco

THE OIL BURNER WITH THE ECONOMY CLUTCH

Gilbert & Barker Manufacturing Company
West Springfield, Mass., and Toronto, Canada

CONVERSION AND REPLACEMENT BURNERS • BOILER BURNER UNITS
WARM AIR CONDITIONERS • INDUSTRIAL BURNERS

Another Reason For LONGER PUMP LIFE with SUNDSTRAND FUEL UNITS



Cutaway section of Sundstrand Fuel Unit. Note length of shaft bearing and sturdy 7/16" diameter shaft.

Large 7/16" Dia. Shaft and Long Bearing Eliminates Shaft Failures

There are many reasons for the dependable year-in, year-out performance of Sundstrand Fuel Units. Not least in importance is the design and construction of the main shaft. Because it is of hardened and ground steel, and because it is larger and has a longer bearing surface, shaft failures are eliminated. This one feature, together with the other features of Sundstrand Fuel Units will save you trouble and expense . . . on both original equipment and replacements. Get the full story from the booklet offered below.



FREE ADDITIONAL DATA—This booklet will give you more complete details on the Sundstrand line. Use it for a handy reference on those unusual jobs that come up now and then. Write for your copy today. Ask for Bulletin No. A-38. NOTE: Sundstrand Fuel Units are being manufactured in Canada by John Inglis, Ltd., 14 Strachen Avenue, Toronto, Canada.



SUNDSTRAND HYDRAULIC DIVISION

2561 ELEVENTH STREET • ROCKFORD, ILLINOIS

FUEL UNITS • HYDRAULIC PUMPS • TRANSMISSIONS • FLUID MOTORS • VALVES and CONTROLS

Fuel Units for All Types of Burners



S1-B—Most popular unit for domestic oil burners. Entire capacity of pumping members is 21 GPH. Maximum nozzle capacity of either 4½ or 6 GPH depending upon strainer rating.



S1-H—Has maximum nozzle and strainer capacity of 13 GPH. Entire capacity of pumping member is 27 GPH.



S1-J—Used on oil burners with main line filtering means of capacity equal to or greater than maximum capacity of burner. Maximum nozzle capacity is 20 GPH. Entire capacity of pumping members is 35 GPH.



S-2—Standard two-stage pump with strainer. Has maximum nozzle capacity of 6 GPH. Entire capacity of pumping members is 18 GPH.



Model R—Two Stage—These units are self-purging and recommended for two line installations where unusually long suction lines and high lifts are required. Available in either 6 or 10 GPH nozzle and strainer capacities. Entire capacity of pumping members is 18 and 21 GPH respectively.



L1—For small oil burners and water heaters. Has nozzle capacity of 2 GPH, has 25 watt power consumption, and when operated at 1725 RPM provides pumping capacity of 6 GPH. Recommended for gravity feed installations only.



1-OB Series—Pumps without strainer and regulating valve. Made in 3 sizes of 21, 27 and 35 GPH.



SOLENOID OPERATED UNITS FOR FAST CUT-OFF

Available for any Sundstrand Model S1 Fuel Unit when factory assembled. It provides instantaneous cut-off on high resistance type furnaces and eliminates an unbalanced air-oil condition upon shutdown. Prevents "flutter" and "puff-back" in combustion area and produces absolute clean burning.

Here's the line for '49

on All
Counts!

✓ **MORE MODELS** to satisfy more customers.

✓ **MORE FEATURES** for competitive advantages.

✓ **SOUND PRICES** help you sell all types of installations.

✓ **HUSKY CONSTRUCTION** reduces profit-draining service problems to a minimum.

If you wrote your own ticket, you wouldn't find a more profitable line to handle than Fluid Heat! It's packed with easy-to-sell, customer-appealing features like the economical "Fuel Saver" control; C. A. C. (continuous air circulation), and smart styling. Priced to fit every pocketbook, you can sell Fluid Heat for the large, medium or small home. Its husky, well-designed construction—product of high-quality materials and years of engineering "know-how"—makes every buyer a satisfied customer. And look at all the models Fluid Heat gives you to sell! There's a lot more to the Fluid Heat story. So write today for full details on a Fluid Heat Franchise and find out why dealers everywhere rate it the *most valuable in the industry!* Address: FLUID HEAT OIL BURNER DIVISION, Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Maryland.

fluid heat
OIL BURNER

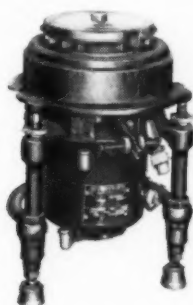
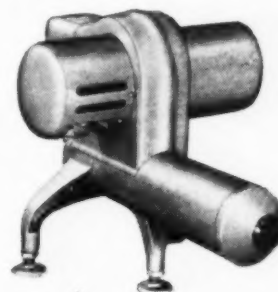
"WORLD'S ECONOMY CHAMPION"

Manufactured by Anchor Post Products, Inc.
Baltimore 24, Md., Established 1892



Boiler Burner Units, 3
Models from 475 to 840 sq. ft. of
standing hot water.

Pressure Burners, 4
Models with firing
rates from 7/10 to 12
gallons per hour.



Wall Flame Rotary
Burners, 2 Models
with firing rates from
1/2 to 4 1/2 gallons per
hour.



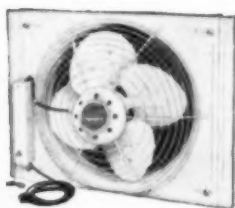
Air-Conditioning
Furnaces, 5 Models from 65,000
to 200,000 B.T.U. per hour.

FRESH-AIR MAKER

FANS

by **SCHWITZER-CUMMINS**

Builders of Fine Fans for 30 Years



ADJUSTABLE WINDOW FANS—From a lovely powerful 10" surprisingly low priced, through 12"-16"-20" sizes, single and three speed—many refinements and distinctive features.

Many useful types in a generous assortment of sizes make the Fresh-Air Maker a profitable and satisfactory line for you to sell. Your trade will like their fine performance—good looks—and reasonable price. All are built to deliver lots of air, quietly, and for long years of service. It will certainly pay you to look into the Fresh-Air Maker.



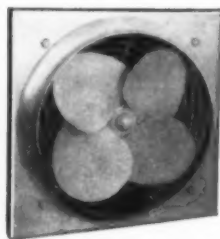
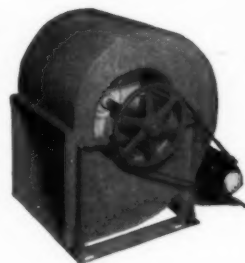
PORTABLE FANS—12", 16", 20"—attractive—quiet—large delivery—three speed—adjustable for any angle. Useful type, suggestive of a lot of gift business.



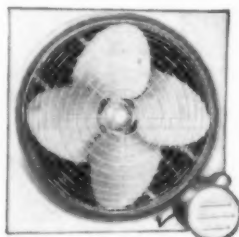
CEILING "PACKAGE UNITS"—5 models 24", 30", 36", especially designed for the popular small home market. Every Fresh-Air Maker can be ceiling installed, all ball bearing equipped.

Contact with good reliable dealers is desired as we have some valuable locations open for distributors or dealers who want a reliable, salable fan line.

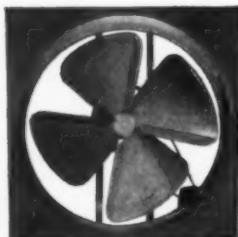
HY-DUTY CENTRIFUGAL BLOWERS—8½" to 25" inc. with all needed intermediate diameters—single and double inlet—all outlet positions and practicable motor sizes—moderately priced, but built to be the quietest, best performing, longest lasting blower on the market—especially well finished.



EXHAUST FANS—Direct driven 12"-16"-20" 3 speeds—24" belt driven—capacity range 450 to 4200 cfm.



24" WINDOW FAN—Locates outside in window frame for a big job in a small home, saving all installation cost—arranged also for attic, ceiling or transom use—distinctive, nothing else like it. 4200 to 4500 cfm.



ATTIC FANS—9 models—24", 30", 36", 42", 48"—ruggedly built, a quality look, big volume, belt driven—4200 to 20,500 cfm vertical or horizontal, wide deep blades, extra deep venturi, all ball bearing.

**SCHWITZER-CUMMINS COMPANY
VENTILATING DIVISION**

1145 EAST 22nd STREET
INDIANAPOLIS 7, INDIANA
ENGINEERS AND MANUFACTURERS

of Fine Fans for 30 years

**AIR HANDLING
AT ITS
QUIETEST BEST**





Mop made by Frank P. Frey Co., Chicago, Ill.,
complete with Fibreglass Yarns.

Mops made of **FIBERGLAS** **MOP YARN**

hold more
spread easier . .

cut mop bills in half

Mops made with Fibreglass Yarns pick up more hot stuff per dip than any ordinary mop—and deliver all they pick up because none of the bitumen soaks into the fibers.

Mops made with Fibreglass Yarn stay uniform in size longer than other mops that break down from heating or burning. They slide easily and spread evenly as the ends of the yarns splay out.

They cut your mop bills, too, because they outlast ordinary mops by 10 or 15 to 1—have a working life of at least 10 days. They can't char or burn. Previously used mops thaw out in two minutes.

Made by leading manufacturers. Check your supplier today, or write Owens-Corning Fibreglass Corporation, Dept. 930, Toledo 1, Ohio.

In Canada: Fibreglass Canada Ltd., Toronto, Ontario.

Other Manufacturers:

Beacon Sales Co., Boston, Mass.
A. G. Brauer Supply Co., St. Louis, Mo.
California Cotton Mills, Oakland, Calif.
F. W. Winne Co., Philadelphia, Pa.
Kirby Industries, Los Angeles, Calif.; Wheeling, West Va.
David Levow, New York, New York
Lexington Supply Co., Cleveland, Ohio
Miracle Mop Co., Westmount, N. J.
Nelson Mop Co., Chicago, Ill.

*Fibreglass is the trade-mark
(Reg. U. S. Pat. Off.) of Owens-
Corning Fibreglass Corporation
for a variety of products made
of or with glass fibers.

OWENS-CORNING
FIBERGLAS
U.S. PAT. OFF.

**BUILDING
MATERIALS**

BUILDING INSULATION • ACOUSTICAL TILE AND BOARD • ROOF INSULATION • MEMBRANE FABRIC • ALSO BASIC MATERIALS FOR SIDING, ETC.

AMERICAN ARTISAN, February, 1949

\$1,000⁰⁰ FOR A



**These rules
are
really simple**

1. The contest is open to any resident of the United States employed by, or acting as, a recognized dealer, jobber or contractor engaged in the sale or installation of forced warm air heating equipment—or members of their immediate families.
2. Each entry must be written on one side of the stationery or statement of such a dealer, contractor or jobber—or on forms supplied at the Heating and Ventilating Exposition. There is no limit to number of entries each contestant may submit, but each must legibly contain the following information: The name you suggest, and not more than 25 words describing the reason for your choice; in lower right hand corner, print Name of Contestant, Address, City, Postal Zone, State and Telephone Number, if any. (Names of contestants will be withheld from judges.) KO-Z-AIRE assumes no responsibility for delivery of any entry, but all will be acknowledged promptly.
3. No entry postmarked later than midnight, April 10, 1949, will be considered. Mail all entries to Contest Editor, Jones & Brown, Inc., 439 Sixth Avenue, Pittsburgh 19, Pa.
4. Entries will be judged on merit and availability of the suggested name as a trade name, and on the worthiness of the 25 word statement. Plainness and clarity are important. All entries become the property of KO-Z-AIRE, Inc., and none will be returned.
5. In the event of identical names being chosen as winners and where the 25 word statements accompanying each are judged to be of equal merit, duplicate prizes will be awarded. Judges will be representative authorities of the warm air heating industry and their decisions final.
6. No employee of Jones & Brown, Inc., KO-Z-AIRE, Inc., their advertising agencies or publications in which these advertisements appear will be recognized as a contestant.
7. This contest is subject to all federal, state and local laws.
8. Winner will be advised by mail on or before May 15, 1949, and his or her name, along with the winning entry, will be announced in the May issue of this magazine.

*Nothing to Buy—
Costs Nothing to Try!*

**Send as many names as
you wish to enter this
big contest**

One thousand dollars in cold cash! That's a prize to make trying worth while . . . down payment on a new car, new duds for the family, a sweet nest egg to sock away for vacation days. And it's so easy to win. All you need do is name our new conditioning unit—the latest, greatest home heating development in years. Read the rules now, check the features of this amazing new KO-Z-AIRE, then send in your suggestions for a name . . . together with your reasons why you think your entry should win, written in 25 words or less.

anyone in your company may win

Since the best name is bound to come from those who know the heating business best, this contest is open only to those in the industry, and their families. The boss or the office boy can win! Display this ad where your employees can see it—and be sure to send in your own entries. *You* might be the big winner!

A New KO-Z-AIRE®
in America's Finest Line of Conditioning Units

NAME

**We will pay YOU
to name this
HISTORY-MAKING
HEATING UNIT**

*It's Fun!
It's Easy!
It's Exciting!*

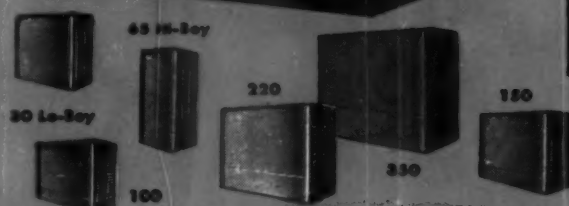
**Study these features . . .
then think of a name**

1. The new KO-Z-AIRE is the most compact and easily installed central heating unit ever built. You'll be amazed at how little space it actually occupies. Think of it . . . only 36 1/4" high, 23" wide, 39" deep.
2. The new KO-Z-AIRE is approved by AGA (American Gas Association) and is designed to deliver a heat output of 83,200 Btu.
3. The new KO-Z-AIRE is shipped as a self-contained package. Once the plenum is attached, only simple connection of fuel and electric lines is needed.
4. The new KO-Z-AIRE is designed so that blower blade assembly is completely surrounded by circular heat exchangers, based on proved engineering design.
5. The new KO-Z-AIRE is finished in beautiful, durable Hammerloid and weighs less than any unit of its kind. (Shipping weight, approximately 250 lbs.)
6. The new KO-Z-AIRE is automatically fired by gas, and has oversize filters which assure delivery of clean, dust-free air.
7. The new KO-Z-AIRE has easily removable panels for quick inspection or adjustment.

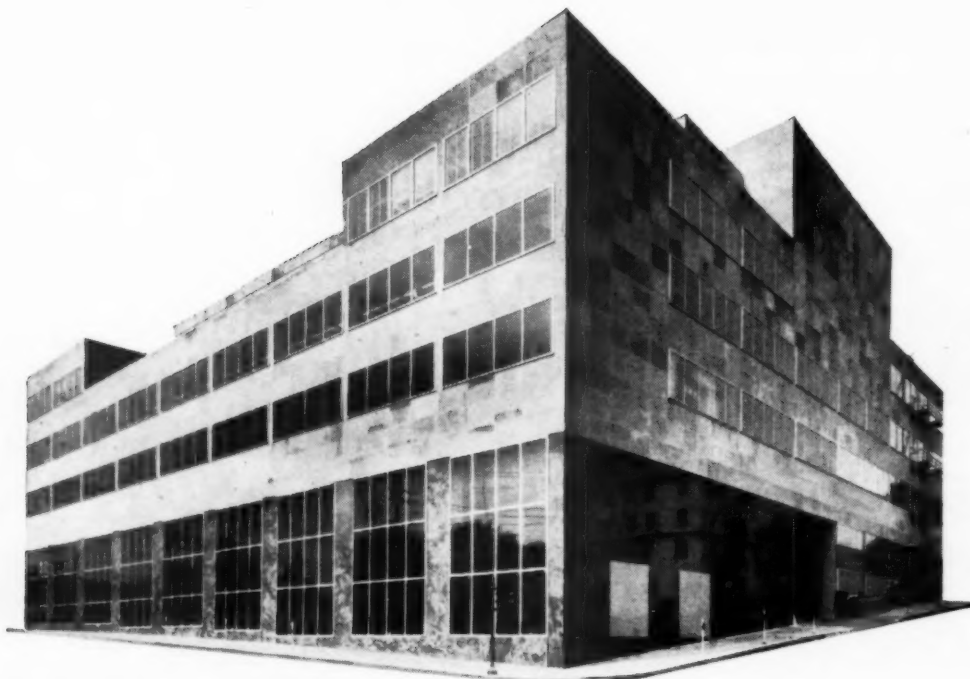
JONES & BROWN, Inc.

439 SIXTH AVENUE • PITTSBURGH 19, PA.

**There's a KO-Z-AIRE
for every size home**



**Don't wait! Don't delay!
Start sending names
in today!**



At the Oregonian Building in Portland:

All Ductwork is Kaiser Aluminum!

Home of the Portland Oregonian, "the great newspaper of the West," this new structure is the largest built in the northwest in the last twenty years. Costing approximately \$4,000,000, it covers one square

block, is six stories high, has 217,000 feet of floor space. Among its scores of modern features is the heating and ventilating ductwork—four and a half miles of it—every inch made of Kaiser Aluminum!

Here's why:



THIS HUGE DUCT dramatizes the superiority of Kaiser Aluminum over other materials. Light in weight, easy to handle, extremely workable—yet *tough*—this modern material means less worker fatigue, less wear on shop equipment, less scrap loss. It takes a perfect Pittsburgh Lock Seam, and there is no coating to spall.



THE THOMPSON SHEET METAL WORKS, who did the fabricating, had no trouble keeping pace with construction schedules. Because Kaiser Aluminum is so easy to fabricate, they set up shop right in the Oregonian Building. Result: elimination of extra steps in handling, trucking, and storage of assembled sections.



ONCE INSTALLED, ducts of Kaiser Aluminum are unmatched for beauty. They'll last for generations, will never rust, never need paint. On *every* count—lightness plus strength, workability plus ease of handling, durability plus beauty—and for greater thermal efficiency—the demand today is for Kaiser Aluminum!

Permanente Metals

PRODUCERS OF

Kaiser Aluminum

SOLD BY PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND 12, CALIFORNIA . . . WITH OFFICES IN:
Atlanta • Chicago • Cincinnati • Cleveland • Dallas • Detroit • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee
Minneapolis • New York • Oakland • Philadelphia • Portland, Ore. • Salt Lake City • Seattle • Spokane • St. Louis • Wichita

"For COURT OF FLAME features, you can't beat the
Water Heater that's *Built to Stay Young*"



The BRYANT
Blue Seal
Court of Flame
WATER HEATER

Top to bottom...
feature for feature... the best Quality
Automatic Gas Water Heater you can sell



says Wm. H. Frank,
President, Countywide, Inc.
133 Grove Street,
White Plains, N. Y.



"In this campaign, I'm on the side of the Bryant Blue Seal Water Heater. It's the long-lived beauty with the looks and the features that make for real sales appeal... real customer satisfaction. And I'm all for the fine service we get from our Bryant Distributor."

• Like dealers the country over, Mr. Frank has discovered this salient fact about the Bryant Blue Seal Water Heater: Top to bottom... feature for feature... it's the best high-quality automatic gas water heater you can sell.

These are the unsurpassed Blue Seal advantages that make it the water heater Mr. and Mrs. America want: Automatic features; dependability, low-cost service; cleanliness and quality construction... plus the Bryant 10-Year Protection Plan, which stands for long life and complete customer satisfaction.

And these are the Blue Seal features that make it your best bet in the 1949 Court of Flame Campaign:

THE BRYANT PROTECT-O-ROD—provides cathodic protection, adds years to the life of the tank.

THE BRYANT LINK-TRAP BAFFLE (exclusive)—assures maximum heat absorption. Installed in segments to permit easy removal.

PORCELAIN-ENAMELED AERATION PLATE (exclusive)—protects burner and pilot against condensate; radiates heat to water; keeps base and burner door cool.

GRAYSON UNITROL—thermostat and thermocouple pilot. For use with all types of gas.

STREAMLINED DOWNDRAFT DIVERTER (exclusive)—saves height.

EXTRA-HEAVY STEEL TANK—hot-dip galvanized, automatic shielded-arc welded.

THICK FIBERGLAS INSULATION—for minimum heat loss.

ONE-PIECE STEEL PEDESTAL BASE—saves height, provides firm footing.

CAST IRON BURNER with raised, drilled ports for best efficiency. For use with all gases.



Let the pup be furnace man
... and water boy, too!

bryant
AUTOMATIC HEATING

BRYANT HEATER DIVISION
AFFILIATED GAS EQUIPMENT, INC.
Cleveland, Ohio • Tyler, Texas

Who pays your company's advertising bill ?

PEOPLE WHO REGARD advertising as an economic waste are fond of pointing out that it's the customer who pays the bill.

And they are right.

The customer also pays for your power supply, your production tools, your plant maintenance, your salaries. All these are figured into the price of your product, along with the cost of your advertising.

Does this mean that the customer pays more for your product because it is advertised? Not at all. No more than he pays anything "extra" for the machinery on your production line!

The truth is, your production tools enable you to *reduce* your manufacturing cost-per-unit — and hence your price to the customer.

Advertising works the same way. For it is simply the application of assembly-line methods to the *manufacture of a sale*.

How can selling be mechanized? Just consider the five basic steps —

1. Seeking out prospects
2. Arousing their interest
3. Creating a preference for your product
4. Making a specific proposal
5. Closing the order

Advertising performs the first three

of these jobs. And it performs them *far more economically* than any other means, leaving your salesmen free to concentrate their valuable time on the two jobs they alone can do, and do best.

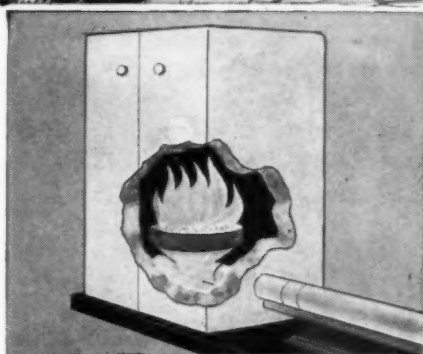
As with any other capital investment, the yield from advertising depends on how *efficiently* it is put to work. But this much you can be sure of: nowhere does advertising work more efficiently than in business papers, with their tremendous concentration of hand-picked readers. Nowhere will your advertising dollar go so far toward reducing the cost of *manufacturing a sale!*



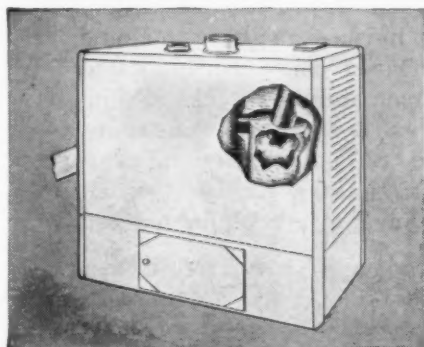
AMERICAN ARTISAN

is a member of The Associated Business Papers, who have published an interesting folder entitled, "10 ways to measure advertising effectiveness." We'll be glad to send you a copy. And if you'd like reprints of this advertisement (or the entire series) to pass along to others in your organization, just say the word.

**Does cold weather
mean cold words
among your
customers?**



Automatic Anthracite Stokers Installed in an existing boiler or furnace and in new houses, automatic hard coal stokers deliver *plenty* of heat quickly . . . save up to 50% on fuel bills . . . eliminate fuel worries.



The Revolutionary Anthratube The Anthratube saves on fuel bills . . . its proved efficiency is over 80%. This scientifically engineered boiler-burner unit, with "Whirling Heat" and other revolutionary features, produces quicker response and superior performance than units using other types of fuel.

There are no Ifs, Ands or Buts when you sell Automatic Anthracite Heating

YOUR CUSTOMERS can have *plenty* of worry-free heat because there's plenty of hard coal and there is anthracite equipment to fit any heating requirement.

A whole winter's supply of anthracite can be stored easily in advance. Everyone wants this kind of security and convenience. They have *just that* when you sell automatic anthracite equipment.

Look over the two types of domestic anthracite equipment shown here. They burn the cheaper sizes of economical hard coal . . . completely automatic from bin feed to ash removal.

Write to us for more detailed information on all types of anthracite heating equipment—domestic and commercial.



ANTHRACITE INSTITUTE

101 Park Avenue

New York 17, New York



Need quick service on stainless sheets?

Call Ryerson for Time-Tested Allegheny Stainless

When sheet metal jobs call for material that's longer lasting, better looking—and more readily available, it will pay you to call Ryerson for Allegheny stainless. You can get quick shipment of any quantity. The same prompt, personal service whether you need a single piece for experimental use or a truck load.

You can call, confident of getting the best. Allegheny Metal is the time-tested stainless steel made by America's oldest stainless producer. And just as Allegheny was the pioneer manufacturer, so Ryerson was the first to offer

stainless from stock. A quarter century of stainless experience enables us to give practical assistance in specifying and fabricating this profit-building metal.

Expert counsel is always available. Many types, gauges and finishes are always on hand at all of our thirteen conveniently-located plants. And Ryerson stainless stocks also include welding rod and fastenings as well as bars, plates, tubing, etc. So contact the plant nearest you for complete stainless service. Current listing of actual inventory sent on request.

for stainless
RYERSON[^]STEEL

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles and San Francisco.

AMERICAN ARTISAN

CAC—The Way to *Living Comfort*

IF A BALMY SPRING BREEZE on a June day produces the optimum of comfort, it does not logically follow that a blast produces a superabundance of comfort.

Excessive air motion in occupied space (drafts) is being cited as a serious defect of winter air conditioning systems and in some areas complaints have reached the proportion of a serious threat to the national acceptance of warm air heating. The criticism arising from all this is making our industry vulnerable to the publicity of competitive methods of heating which do not provide for air circulation. We will continue to be vulnerable as long as winter air conditioning systems are permitted to operate with high rates of air change or in a manner that allows blasts of air to strike occupants. In too many cases, excessive air motion has become the major reason for selecting competitive heating. The widespread nature of the problem indicates that too many contractors have made too little progress in solving it, have given too little attention to the air distribution of an installation, and have been too indifferent to the improvement of *indoor comfort* obtainable from the adjustments outlined in the Continuous Air Circulation program of the National Warm Air Heating and Air Conditioning Association.

Everyone who has been associated with the warm air heating industry during the past 20 years has benefited from the national acceptance of the industry's product. Many contractors have found frequent evidence of this acceptance and have profited from it. These experiences readily disclose the advantages of being identified with a system of heating that is in good repute and this reputation can and must be protected. No one person or segment of the industry can claim the distinction of having created this recognition and neither can be excused from contributing a just share in maintaining it. Fundamentally, the inherent features of the warm air heating system have been largely responsible for its acceptance, for its features of cleanliness, adequate humidity, air circulation, and flexibility are as natural as nature itself.

Despite these natural attributes, its functions are subject to control and improvement. The demand for an improvement in *indoor comfort* is continuous and the quality of comfort offered by

this industry cannot remain static. In the past 20 years, research into the science of warm air heating has stimulated radical improvements in the design and application of equipment. Installation practices have seldom kept abreast with these advancements and in some cases, public demand has forced the recognition of advancements. Similarly today, public demand, motivated by research and publicity of competitive methods of heating, calls for a new concept of comfort and our providing it necessitates immediate and vigorous action to meet this demand.

In recent years, numerous new forms of heating have claimed public attention and are challenging the acceptance of warm air heating. These claims have not fallen on barren soil. For some years, contractors in the warm air heating and sheet metal industry, which claims warm air heating and other forms of air distributing systems, have been too busy and in some cases too oblivious and too selfish to recognize these threats. Focal point of attack has been the detrimental influences on comfort from convection currents and air motion in occupied space. With it has developed the implication that air circulation is a mark of defect that identifies warm air heating, yet some form of air motion is inherent and ever-present in all forms of heating.

Is air circulation a stigma, something detrimental to human comfort that should be avoided? If so, then all concepts of ventilation have been conceived with disregard for comfort. To the extent that we have failed to control and improve air circulation, we have allowed what should be a desirable attribute to jeopardize the acceptance of warm air heating.

Today, the need to strengthen the acceptance of the past has become imperative. The industry must act to hold its leadership. We are emerging from a period in which it was a problem to get a job done but in the future there will be a little more time to do the job a little better than in the past. There will be demands for improved comfort and competition will enforce them. Warm air heating is capable of furnishing the *living comfort* to meet these demands, for this method of heating lives and breathes and contributes to life itself.

The sesame to *living comfort* is CAC. For too long it has been ignored.



Arnold Kruckman's

THERE seems little doubt that a plan to nationalize steel will be placed before the Congress. It is to be so drafted that the authority to act would be left solely with the President. In a sense it is probably the most complete and autocratic power ever requested for a President in peacetime.

It is generally regarded here as a dangerous experiment in political economics. Such an adventure in steel could set up a precedent for Presidential action which might be invoked in connection with almost any other basic or fundamental industry of the nation. There is some opinion in Washington that nationalization of steel would quickly be followed by nationalization of the chemical industry, fuel-producing industries, textiles, other metals, food and similar fundamental bases of the national economy. Obviously, nationalization of steel would affect all industries which immediately depend upon steel. They would be more or less under the same compulsion to deal directly with the economic phase of government that would be part of steel itself. They would have to buy their steel from government, and obtain their steel by favor of the officials and employees of government.

They would be compelled to deal with the government bureaucrat in their business as they now deal with him chiefly in their relations with the political machinery of the nation, the state and the community. In some of its phases the nationalization of steel might mean the nationalization of the industries which depend upon steel for their basic material. This brings directly to the front the prospect of a hugely expanding government bureaucracy; and it means that the same expansion could be expected in the corollary activities which would stem from the nationalization of steel and other industries.

Lack of Discussion

The most curious fact connected with this proposed change in our system of government is the fact that it has been put in process without much discussion either in the Capital or elsewhere. It is really one of the most profound socio-political shifts in the history of the nation, yet little has been said about it in print, on the radio, or in Congress. The assumption is that the theory of socialization has gone so deep and expanded so widely that it is accepted as an inevitable effect of the sequence of our present life. Also there appears to be a sort of apathy, here and abroad, which causes people to take and like things which they really do not like and do not wish to take.

This is written the night before the Inauguration, the event which one of my colleagues calls the Coronation.

It apparently looks something like that to some of the people who are descending upon the Capital in unparalleled numbers. In fact it probably looks like a Coronation of their hopes, their wishes, and their aspirations, to the majority who make up the million plus out-of-town visitors, and probably most of the million and quarter people who live here. Bear in mind, the official estimate of Federal employees in the government here is something over 800,000 civilians—classified and unclassified. Those who are classified have a vested right to their jobs which cannot be challenged except by intricate and prolonged proceedings; those who are unclassified are more or less on a temporary basis and can be separated from their jobs with less circumlocution.

Advocates of Truman Program

They are all, however, interested, naturally, in the maintenance of the principles and ideals which are represented by the Truman program. And outside of Washington there are at least another 2,000,000 of them. Strangely enough, it is reported there are actually more government employees in New York City and surroundings than there are in the Capital itself. This discussion of Federal employees, and the Inauguration appears important to this correspondent because it has fundamental, basic significance to the businessman everywhere. It is the incarnation of the social philosophy inherent in the program proposed by the President in his State of the Union Message and in his Economic Report. This whole Inauguration incident is the capstone on a revolution which has taken place and which apparently few outside of Washington really appraise at its real value. The people who have come to Washington for this Inauguration are the representatives of those who constituted that great silent group which unexpectedly voted Mr. Truman into the White House. At this moment the streets of central Washington are crowded with them. They are surging back and forth in a gala spirit, while the bands are playing over the radio and blaring over the street-corner public address systems.

They are from all states in the Union. You can detect the accents of the Far West, of Texas, of the South, of the near-Northwest, and of New England and Pennsylvania. There are an amazing number of ten gallon hats. They are the people who cannot understand why there cannot be a greater distribution of the good things of life, why economics cannot be so organized that Standard Oil Co. may be restricted in its profit of a million dollars a day, and why that million dollars

Washington Letter



cannot be spread around more equally. Their thought on economics is more emotional than intellectual, although it is sincere and genuinely honest. They are ardently in favor of Mr. Truman's socialized medicine; they think he is right in demanding that steel be nationalized; they look forward with eager hope to the great public building program with slum clearance and all the other improvements. The 35 tenets advocated for the improvement of the affairs and lives of Americans in the State of the Union message and the Economic Report are real mileposts in their lives.

The Millenium!

They have an idea that Mr. Truman will bring some sort of millenium to this country. They are not entirely clear how it will be done, but they feel that a man who is one of themselves, who comes from their own milieu, as it were, is some one they can understand, and trust to fight for what they want. Even if he fails to deliver any part of his program he will continue to be their hero. His good nature, his verbal shorthand in his interviews, his directness, his neighborliness, and above all his smiling courage in the face of what seemed impossible odds in the election, have made him the one man in public life whom they trust. But they would not accept leadership if he did not represent their desire for social change. It is here you will find those who think you should be under control in your relations with those you employ. They are eagerly in favor of a complete renovation of the Taft-Hartley labor law. They are in favor of the civil liberties legislation advocated by the President. They believe that the Fair Employment Practices Commission should be brought into existence as soon as possible; and the curious thing is that they believe this even when they hail from the South. This extraordinary championship of the Negro by some Southerners is one of the most curious phenomena of this time. It apparently stems from those young people who are the product of those Southern institutions of learning which in the days since the New Deal began have been laced and interlaced with cultural leaders and guides who are intellectually radical, and who have passed their extreme liberalism along to the graduates of the past decade. The sincerity of these young people is one of the most inspiring experiences one may have, although one may utterly disagree with their beliefs and philosophy.

This invading inaugural crowd clearly and obviously is convinced that we must have some sort of state socialism, and they are happy over the Truman program because they feel what he has promised, and

what he is fighting to get from Congress, is the sort of socialization they desire. From many of them I have heard the past 24 hours ardent approval of these words which appear in the Economic Report of the President:

"We must fulfill the requirements of our essential programs—national defense; international reconstruction; and domestic improvements and welfare, even if doing so may require the temporary exercise of selective controls in our economy; we want the greatest amount of economic freedom consistent with the security of welfare of the people; but we do not want to sacrifice that security and welfare because of narrow and selfish concepts as to the limits of government action. And WE WOULD RATHER HAVE THESE RELATIVELY UNPLEASANT RESTRICTIONS ON OUR FREEDOM OF ACTION FOR A WHILE THAN IMPERIL OUR SECURITY OR ALLOW OUR HUMAN AND MATERIAL RESOURCES TO DETERIORATE."

Clif Stratton, one of the most able correspondents in the Capital, who represents the Capper publications, made this comment upon the foregoing quotation:

"This is just a paraphrasing of the proclamations and orations by which Adolph Hitler sold 'Mein Kampf' to the German people; and which Benito Mussolini used in forcing his 'Corporate State' upon Italy; that Lenin used and Stalin uses in announcing each successive Five Year Plan. Not that our good and genuinely kindly neighbor Harry S. Truman has any intention of becoming a Hitler, a Mussolini, a Lenin or a Stalin. But the end is very apt to be the same—an ever-expanding central government, accompanied by an ever-contracting freedom, economic and then political, for the individual ruled by the government."

Controls Sought

These visitors who have taken over the Truman Inauguration believe in all the recommendations the President has made, which include:

To continue the power to control consumer credit and enlarge the power to control bank credit.

To grant authority to regulate speculation on the commodity.

To continue export control authority and to provide adequate machinery for its enforcement.

To continue the priorities and allocation authority in the field of transportation.

To authorize priorities and allocation for key materials in short supply.

To extend and strengthen rent control.

To provide standby authority to impose price ceilings

(Please turn to page 128)

INCOME TAX IS EASY!

BETTY LEE GOUGH
New Orleans, La.

"IT'S LIKE this," said the first heating contractor, leaning over the desk to point a pencil at his friend. "I figure anything I do, I lose. The government is going to come back at me for more taxes no matter what happens. They always question something on my income tax return. So I've quit worrying about it, except to begrudge the nights when I have to work filling out my returns. Every year since I've been in business they've found something wrong."

"You don't know how to do it, my friend," replied the other. "The Treasury Department has never come back at me about a tax return and I don't work nights over them either. Making out a return is simple enough. It's easy to do it right the first time if you take the trouble to find out what is an allowable business expense."

"As a matter of fact," continued the second, "I found that after I learned how to do it right, I saved money. I pay less tax now because I know just what items I can claim as business expenses."

Is income tax easy? Most contractors say no. But the fact is that if the rules are known, the return can be filled out—as far as business income is concerned—from the annual profit and loss statement. It can be done in minutes instead of hours and, as the second heating contractor pointed out, there is a saving from knowing what business expenses may be deducted as overhead from gross profits. Every year, thousands—perhaps hundreds of thousands—of dollars are un-

knowingly overpaid by small business men who do not know what overhead items are defined as legal business expenses.

Business Man's Tax Forms

Let us look at the things a business man must consider when filling out his return. In the case of an individual's own business there are only three forms to consider: the short form, the long form, and the capital gains and losses form. Only two of them at the most are used and if there were no gains or losses from the sale or exchange of capital assets, only one form is required.

What is the difference between the short and long form? First, the short form makes use of the tax table which automatically limits it to incomes of less than \$5,000. Statutory deductions (contributions, interest, nonbusiness taxes, etc.) are not listed. The tax table on the back of the return allows approximately ten per cent for these personal deductions and so, it is not necessary to list them. Whether you wish to take advantage of the standard deduction included in the table or list the statutory deductions one by one depends upon the amount of the deductions. If more than 10 per cent of the adjusted gross income was spent for these items, then there is an advantage to claim them by listing each individual item. However, to do this, it is necessary in all cases to use the long form. This applies whether the reported income is less than or more than \$5,000.

The amount of tax is entered on the first page of the short form and the first sheet is filed with the Collector of Internal Revenue.

Business men mistakenly believe that it is necessary to use the long form to take all of their business expenses as allowable deductions. This is not so. All business expenses are listed in Schedule C whether the income is reported on either the long or short form. The identifying feature of the short form is the use of the tax table which incorporates the standard deduction and this, of course, removes the necessity of listing the deductions.

If more than ten per cent of the adjusted gross income was spent for items allowed as deductions, then there is a savings in the use of the long form. However, as a general rule, it is better for persons of less than \$5,000 income to use the short form.

Until the passage of the 1948 Revenue Act, the standard deduction of ten per cent applied only to income up to \$5,000. Now however, taxpayers of \$5,000 income



Here is the way many business men feel at income tax time. The author proves that such confusion is unnecessary.

or more are entitled to the standard deduction of ten per cent or \$1,000, whichever is the lesser. This raises the deduction of taxpayers in the \$5,000 to \$10,000 bracket according to income and raises the maximum deduction from \$500 to \$1,000.

The long form is mandatory if the income is \$5,000 or more. Both single persons and married couples who file joint returns are entitled to the standard deduction. Taxpayers using the long form may claim deductions amounting to more than ten per cent of their income by listing the deductions. The identifying feature of the long form is the use of the surtax table to compute the tax.

Income Splitting Permitted

The new tax law is the first to make a substantial reduction in income taxes in 23 years. It does this by extending income splitting privileges that were formerly available to the citizens of only 13 community property states. In these states, the combined income of married couples is the property of each, in equal shares. Each spouse could file separate returns and thus take advantage of lower surtax rates. However, the new law no longer permits split incomes on separate returns. Separate returns can indicate only the individual income of each person. Instead, it provides a method for figuring the tax of a joint return in a manner that splits the income equally between the two spouses so the lower surtax rates may be applied. This usually results in a lower tax than would result from filing separate returns under the new law.

To see how much difference this makes, consider the case of a heating contractor whose adjusted gross income was exactly \$9980. If he and his wife had no children or other dependents, they would pay \$1647.25 if the tax were figured as formerly, without the splitting feature, but at current rates:

Adjusted gross income	\$9980.00
Deductions	998.00
Net income	8982.00
Exemptions	1200.00
Net taxable income	7782.00
\$6000.00 @ 22 per cent	1360.00
\$1782.00 @ 26 per cent	534.60
Tentative tax	1894.60
Credit	247.35
Net tax	\$1647.25

When filed as a joint return, the split income features of the present law become automatic:

Net taxable income (see above)	\$7782.00
One-half of net taxable income	3891.00
\$2000.00 @ 20 per cent	400.00
\$1891.00 @ 22 per cent	416.02
Tentative tax	816.02
Credit	117.92
One-half of net tax	698.10
Net tax	\$1396.20
Saving from splitting	\$ 251.05

Business Expenses in Schedule C

The most important thing for a business man to know is what he may deduct as a business expense and what he may not deduct. Roughly speaking, the ordinary and necessary expenses of doing business are defined as business expenses.

Here is what the Treasury Department has to say about them: Business expenses may include reasonable salaries and wages paid, interest on business indebtedness, taxes on the business and on business property, loss arising from business operation, bad debts arising from sales or services (provided the income portion of the amount due has previously been reported in income), depreciation, obsolescence, depletion and rents, repairs and other expenses.

The Treasury also points out that: "Other items are management expenses, commissions, labor, supplies, advertising or other selling expenses, and insurance premiums paid."

Also included are the upkeep and depreciation on cars and trucks used in the business, membership in trade associations, other clubs and Chambers of Commerce where it is sometimes good business to belong, subscriptions to publications (like this one) that you use to help you conduct your business, the cost of supplies, postage, etc., equipment that has only a short life, depreciation on equipment and fixtures that has a life longer than one year, any entertainment that actually helps the business and, finally, travel and transportation expenses.

Many contractors have failed to correctly account for the cost of material they purchased and later found themselves paying back-tax payments plus, on occasion, interest as well. This is because material you have in your inventory at the end of the tax year is not a business expense. You still have it. Until it leaves your physical possession through sale, or until it is definitely written off as useless, it is an asset, not an expense.

When you take a deduction for bad business debts, the Treasury insists that your return show: "(a) the nature of the debt; (b) name and family relationship if any of the debtor; (c) when the debt was created; (d) when it became due; (e) what efforts have been made to collect the debt; and (f) how it was determined to be worthless."

Uncle Sam wants all of this information because of the opportunities for fraudulent deductions that dishonest taxpayers have when they claim bad debt losses. Bills rendered that have remained unpaid are not necessarily bad debts in an income tax sense. A deduction for a bad debt loss is allowed only if you have previously reported the sum due you as income. In other words, the debt must have been reported as income at some time or you cannot take it off as a loss.

How do you figure depreciation? Supplies and other incidental purchases that have a short life only—usually less than one year—can be taken off as direct expenses, but equipment, fixtures, machinery and such—things that last a long time—cannot be claimed in whole during the year they are purchased. You must depreciate them. The depreciation time should be roughly the useful life of the item.

For example, a desk that costs \$100 could be ex-

pected to last ten years. At the end of that time, it would have a resale value of perhaps \$10. So you would depreciate the desk nine dollars each year for the period.

If you use a car for both business and pleasure, figure the part of its life that is devoted to business uses. Then take that percentage of its value. Depreciate the figure you have in the same way that the desk above was figured.

The Collector of Internal Revenue is not concerned about how you carry depreciation on the books, provided you use any recognized accounting method. Figure on the useful life of the item and use the same depreciation procedure consistently.

In writing down the interest you pay on a business debt, be sure that you do not put down interest on any personal loans you might have made. Your business loan is an expense you incur in making money, but your personal loan is not. You can take off personal loan interest as a deduction but only if you use the long form in filing your return. Business loan interest comes off in computing the net profit in Schedule C.

Deducting Business Taxes

You can take off taxes you have to pay for doing business but, again, you may not take off taxes on your home unless you use the long form and enter them as deductions. Like the interest on a business loan, the taxes on your business (and only on your business) are deducted from gross profit to arrive at the net profit shown on your year-end profit and loss statement.

Where do these various business expense items go in the spaces, boxes, and blanks on the long or short income tax form? The easiest way to handle them is to list them just as you would in a regular profit and loss statement, then write this remark across the schedule provided on the form: See attached schedule.

Be sure that such a profit and loss statement is firmly attached to your tax report. Staple or glue it to the top of the return so it cannot get lost in the shuffle of thousands of forms that pour into every Collector's office during January, February, and March.

What about other money you might have taken in, such as from the sale of a house or the profit on a sale of stocks you owned? These come under the heading of capital gains and losses. They should be separately reported on the form that comes with each income tax return. You pay a different tax rate on capital gains.

Capital Gains or Losses

Briefly, there are two classes of capital gains or losses. Where an investment is held for more than six months before its sale, only 50 per cent of the gain or loss is taken into account. This is called long term. A short term capital gain or loss is where an investment is held six months or less before its sale. Then the full gain or loss is taken into account.

Only \$1000 of capital losses may be deducted in one year. The excess may be carried over a period of five years, as a short term loss.

If a home, purchased five years ago, is sold for \$1,000 more than its purchase price, the transaction is scheduled on the capital gains form and transferred to

Schedule D at \$500. Sales of capital assets applying to a business are handled in the same manner on an individual's return. They are not included in the business profit and loss statement in Schedule C.

Here Is a Sample

For a concrete example of good income tax practices, let us look at the way John Jones made out his return. It shows how to handle most situations. He is married, has three children, and is the owner of a small heating and sheet metal business in the South. Last year he did pretty well. In addition to his business income, he made money in stocks and bonds and had other sources of income.

Since his total income was over \$5,000, he used the long form. From his business, Mr. Jones made \$7,200 which was itemized in Schedule C. In addition, he delivered an address to a civic club in another city. He received \$100 for this and his travel expenses amounted to \$54, leaving him \$46 for his speech-making activity. This was entered in Schedule E.

From stock in a dredging company, he received \$1500 dividends, which was entered on line 3.

His savings account at the bank paid \$50 interest during the year and on \$3000 worth of U. S. government bonds, he took in \$200 interest. So on line 4 he entered \$250 as interest. Since the government bonds were purchased after 1941, the interest from them is taxable.

He also owns a brick duplex house which he rents out. From it, Mr. Jones received \$1560 as rent. But it cost him money to keep the rented apartments in shape. The painter put in a bill for \$50. The taxes came to \$120 and interest on the mortgage was \$400. He figured that the house depreciated in value another \$400. All this was entered in Schedule B on page 2 of the long form, showing an income from this source of \$590. The depreciation was explained in Schedule F, taxes and the interest that was paid on his mortgage, in Schedule G.

Mr. Jones also received \$5000 in royalties from an oil company, representing remuneration from a lease from some land on which oil had been discovered. From this figure a certain amount of depletion can be deducted, in the same way as depreciation on fixtures. He took the optional flat figure of 27½ per cent allowed by the Treasury Department. This amounted to \$1375, so the royalty figures were entered in Schedule B, showing an income of \$3625.

During the year he had sold some stock which he had bought for \$4500. He sold it for \$4750 after holding it for more than a year. The transaction incurred brokerage expenses of \$50, making a net gain of \$200.

He also sold the home in which he and his family had lived for several years for a \$2000 profit, after paying a real estate agent his commission.

Both of these transactions were capital gains and so they were entered in Supplementary Schedule D and in Schedule D of the return. Since both were long term capital gains, his taxable income from these was one-half of the actual profit or \$1100.

Mr. Jones elected to list all his personal deductions rather than take the standard deduction of \$1,000 to which he was entitled since his income exceeded \$10,000.

Here are the amounts he listed:

To the Community Chest, he contributed \$250; his church, \$300; and his college, \$50. This made a total of \$600 in personal contributions, aside from whatever amounts may have been given by the business as a matter of business operation. The business contributions had been entered under business expense to arrive at the profit from his heating and sheet metal business.

Aside from a business loan and the mortgage on the brick duplex he rented to tenants, Mr. Jones had two personal debts outstanding. On his home he paid \$250 interest on a mortgage and to the bank, \$500 interest on a personal note. The total interest of \$750 was listed as a deduction.

During the year he sustained a proved personal loss. His automobile was destroyed by fire. This amounted to \$1200 and he claimed the amount as a deduction.

Certain taxes that business men pay as individuals can be deducted when making out an income tax return. Generally speaking, most state, county, and municipal taxes go into this classification. Mr. Jones put down on page 3 the fact that he paid \$420.50 to the state for tax on his homestead, \$175 as personal property tax, and \$45.24 in state sales taxes on his personal purchases. These taxes amounted to \$640.74.

Sickness and medical expenses during the year ran high. A total of \$840 was spent with doctors, hospitals,

and for medicine. However, only the amount over five per cent was allowable as a deduction. Since his total income amounted to \$14,321, medical expenses exceeding five per cent of this, or \$716.05, was deductible. Accordingly, \$123.95 was listed for medical expenses.

After deducting these items from his adjusted gross income, Mr. Jones took advantage of the income splitting features of the new tax law and computed his tax as directed by the instructions on page 3 of the return.

The income from sources listed on page 2 was totaled and entered on line 5 of page 1 and the sum of his adjusted gross income was totaled on line 6. This amount was transferred to line 1, page 3. The deductions listed on the upper part of page 3 which amounted to \$3734.69 were entered on line 2 and this sum was subtracted from the adjusted gross income making the net income (line 3) \$10,586.31.

An exemption of \$3,000 for his wife, three children, and himself was entered on line 4 and the difference was shown on line 5, amount \$7,586.31.

Since Mr. Jones took advantage of the income splitting feature of the new law, one-half of the taxable income of line 5 was entered on line 9. This figure was \$3,793.16. After figuring applicable tax rates and credits by following the instructions of lines 10, 11, and 12, he computed one-half his tax. This amount was multiplied by 2 and entered on line 13 of page 3 and line 7 of page 1 as the amount of his 1948 income tax.

NEWS SUMMARY OF THE MONTH

Steel Production in 1948

ACCORDING TO A PRELIMINARY ESTIMATE by the American Iron and Steel Institute the production of ingots and steel for castings during 1948 was 88,509,083 net tons. This was only a few days production short of the all time record figure of 88,600,000 net tons which was reached in the year 1944.

Capacity of the industry to produce steel now stands at slightly more than 96,000,000 tons, the greatest in history. Ingot capacity was increased by 1,800,000 tons during the year 1948 and further expansion of 2,200,000 tons is expected in 1949 and 500,000 tons in 1950 making a total at the end of that year of more than 98,000,000 tons.

And yet in regard to figures such as these, Benjamin F. Fairless, president of United States Steel Corp., has said, "Capacity is the theoretical amount which can be produced if raw materials of proper quality and required quantities are made available to run the equipment. Production is the amount of product available for shipment as a result of the operation of the equipment. *Production*, not *capacity*, is the means of meeting the needs of the steel consumer. Demands have been made for increased capacity while too little has been said about increased production."

This quotation is from testimony given by Mr. Fairless before the subcommittee on profits of the Joint Congressional Committee on the Economic Report. He

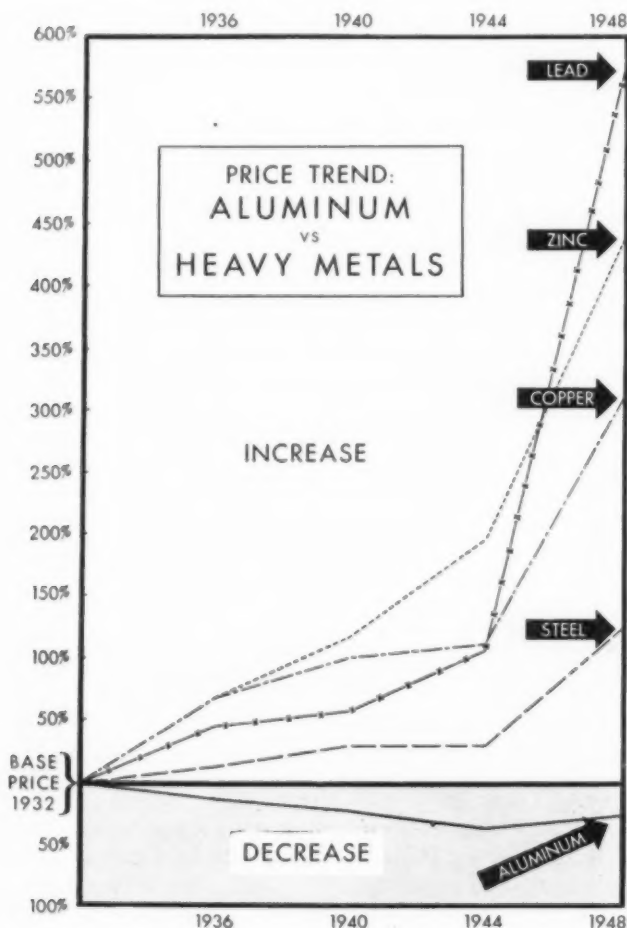
continued his testimony with an estimate that the 1948 production of finished products by the steel industry would reach 65,000,000 tons. This is more finished steel products than ever produced in our history, whether in war or peace. He also stated that his opinion was that the industry would turn out 5 million more tons of finished products in 1949 than in 1948. World War II was fought and won with an average annual production of finished steel products of 60,600,000 tons.

Aluminum Shipments Up

PRODUCTION AND DEMAND KEPT A FAST PACE in the year 1948 as far as aluminum was concerned with demand continuing to exceed available supplies. According to the Aluminum Association the production of primary (new) aluminum in the United States for the first ten months of 1948 amounted to approximately 1,245,000,000 pounds. Shipments of aluminum wrought products, compiled by the Bureau of the Census, Department of Commerce, stood at 1,514,099,000 pounds for the first eleven months of the year. This figure for eleven months shipments was higher than the total in the year 1947 when 1,406,832,000 pounds were processed.

There were several new applications and developments in the aluminum field that tended to keep the demand for this metal at a high peak. Building con-
(Please turn to page 132)

struction applications have become more popular, embossed aluminum sheet has been marketed that has found new uses, aluminum ductwork for heating and air conditioning systems has continued in wide usage and been approved by the National Board of Fire Underwriters and even a sanitary new beer barrel of aluminum has been offered to the brewing industry.



This graph, issued by Permanente Products Co., uses 1932 prices as a basis to show the percentage of price increase for the years 1936, 1940, 1944 and 1948. Prices used in the compilation of the chart for the years 1932 through 1944 were taken from average yearly price figures published in *Metal Statistics—1948*. The 1948 prices were taken from the November 10th issue of *American Metal Market*. Aluminum is the only metal that has decreased in price since 1932, and even with recent increases still remains under the 1932 level.

Construction in 1948

THERE WERE 56,000 NEW PERMANENT nonfarm dwelling units started in December to bring the total for the year up to 926,800, according to preliminary estimates of the Bureau of Labor Statistics, U. S. Department of Labor. This total is only about 1 per cent lower than the 937,000 units started in 1925—our peak housing year.

The number of construction workers employed rose to 2,109,000 in the month of December and for the year as a whole employment averaged over 2 million men per month. These are the highest totals recorded since 1929 when the BLS began keeping annual figures.

Dollar value of 1948 construction was greater, also.

Expenditures in December amounted to \$1,391 million, bringing the total for the year up to \$17,666 million. In spite of the new highs in dollar value set by construction, physical volume still remained below the previous peak wartime and peacetime years.

Allocations in Pig Iron

A PUBLIC HEARING ON THE PROPOSED continuation of the voluntary plan for providing pig iron to foundries for production of cast iron residential housing items was held on Monday, January 31, in the Department of Commerce auditorium in Washington.

Under the proposed continuation, already approved by the producers, pig iron would be made available through next August at the rate of about 100,000 tons monthly. This is the same rate of allocation that has been in effect since the beginning of the plan. The warm air heating industry has been receiving pig iron for the production of furnace castings under this plan.

Allocation Suspended

IN THE FIRST ACTION OF ITS KIND, the Office of Industry Cooperation recently announced it had withdrawn the privileges of the Maridon Manufacturing Co., Inc., Bronx, N. Y., to participate in a voluntary steel allocations plan.

The action was taken on the basis of information obtained by OIC indicating that steel products allocated to the company for use in manufacturing warm air heating equipment were used for other purposes, OIC Director Earl W. Clark said.

"Such mis-use of allocated steel products not only violates provisions of the voluntary plan, but also seriously interferes with successful realization of the objectives of Public Law 395," Mr. Clark said. "With steel demand still greater than the supply, it is important that we maintain a careful watch to see that allocations are used for the purposes intended. We will withdraw certification privileges from any participant who does not comply with provisions of our voluntary plans."

The Maridon Manufacturing Co., Inc. was granted two allocations of steel products and, in connection with each, agreed in writing to comply with provisions of the voluntary plan. On last July 8, an allocation of 576 tons was made to the company for the maintenance of warm air furnaces. On October 14, a supplemental allocation of 83 tons was made for the manufacture of furnace pipe, fittings and ductwork for residential housing.

On December 20, OIC notified the Maridon Manufacturing Co., Inc. that it had obtained information indicating the company's mis-use of the allocated steel products, and offered the company an opportunity to show cause why its privileges of participation in the plan should not be terminated. The company did not ask for the opportunity to be heard, OIC said.

Building Industry Subject to NLRA

A LABOR DISPUTE INVOLVING an electrical sub-contract totaling \$325 on a \$15,000 house "affects commerce" sufficiently to give the National Labor Relations Board jurisdiction, according to a trial examiner who heard

the case. This ruling followed the recent policy of the NLRB of asserting jurisdiction in disputes in the building and construction industry wherever the evidence justified such jurisdiction.

As it turned out the examiner dismissed the unfair labor practice charges which had been filed against a local of the International Brotherhood of Electrical Workers (AFL) finding that the union had not been guilty of an illegal secondary boycott against Samuel Langer, the subcontractor. The union's contention that the Board should not assert jurisdiction because of the small annual business done by the subcontractor was overruled. The examiner found that Mr. Langer had bought materials and performed work for many concerns directly engaged in interstate commerce and stated:

"It is apparent that numerous strands in the web of commerce, several of which crossed state lines, were interlaced in the construction of the Greenwich house. The fact that the value of the materials directly involved in its construction was not large is not controlling, since that construction was embedded in a network of commercial relationships which . . . in their ramifications . . . manifestly affect commerce."

National Association of Home Builders Meets

ECONOMY HOUSING WILL DOMINATE the busiest, most diversified program ever arranged for the National Association of Home Builders when they meet in the Stevens Hotel, Chicago, February 20-24, for their Annual Convention and Exposition.

A record turn-out of more than 15,000 home builders contractors, architects, engineers, bankers, manufacturers and others from the industry will attend the huge builders' meeting. Our industry will be represented at the convention by a number of manufacturers of warm air heating and air conditioning equipment and a technical clinic will be devoted to heating and air conditioning.

A total of 139 leading national firms serving the home building industry will exhibit, demonstrate and explain their newest products to the builders. This is the highest total ever attained and the use of custom-built displays which must meet rigid standards assures quality displays.

Stainless Steel Prices Down

REVISIONS DOWNWARD in some price extras of stainless steel products manufactured by Allegheny Ludlum Steel Corp. were announced in January by Russell M. Allen, vice president in charge of sales.

Quantity extras were reduced from 5¾ cents to 1¾ cents per pound, depending upon size of the individual order. This reduction included all grades of all products except stainless tubes and castings. Percentage of reduction of total price, Mr. Allen pointed out, depended upon the size of the individual order.

Stainless steel sheet gauge extras also were reduced in some instances. Gauges 23 to 26 inclusive were reduced by 2 cents per pound and gauges 21 and 22 were reduced by 1 cent per pound. Simultaneously, a slight reduction in packaging extras for stainless steel strip was announced.

Johnson Bill on Basing Points

SENATOR EDWIN C. JOHNSON OF COLORADO, now chairman of the Senate trade policies committee, has introduced a bill in the Senate which is designed to clarify the law and eliminate the confusion with respect to transportation costs.

The bill condemns and outlaws all price fixing conspiracies in clear terms. It permits sellers acting individually in good faith and in the absence of conspiracy to absorb transportation costs where necessary to meet competition in distant markets. The bill also permits individual sellers, acting in the absence of a conspiracy to sell their products, such as breakfast foods and candy bars, at the same prices to all buyers throughout the country.

It also gives the Federal Trade Commission additional powers to enforce its orders against price-fixing conspiracies.

Perhaps the most important part of the Johnson Bill is the section which defines price as being what the buyer and seller agree to be the price. It also gives the seller the right to meet his competitors' lower prices in all markets and at all times when done competitively in good faith.

The Fuels Picture

THE YEAR OF 1948 was one of record-breaking production in almost every type of fuel. Highlights of the year were the final resolution of the shortage of fuel oil and the increasing supplies of gas made available through the completion of more pipelines.

Fuel Oil

Production records were smashed again and again during the year and 1949 will see even greater accomplishments. Additional wells are to be drilled to produce a total of about 6,000,000 barrels a day and refining capacity may reach 6,500,000 barrels a day before the end of the year. Additions to domestic oil reserves discovered in 1948 totaled 3 billion 410 million barrels, of which 21 per cent was credited to the discovery of new fields.

Solid Fuels

A program has been approved by the Bituminous Coal Research directors which calls for the expenditure of \$515,800 during 1949 to create new markets and hold old ones for bituminous coal. Roughly half of this fund is to be spent in the development of domestic heating equipment.

The anthracite industry spent a total of \$1,500,000 on research and promotion during 1948 and indications are that it will proceed on a similar scale during 1949. Production for 1948 was estimated at slightly over 53 million tons.

LP Gas

Consumption of liquefied petroleum gas increased approximately 30 per cent during the last year and the increase in usage of 1948 over 1947 was greater than the total usage in 1942. It is estimated that there are five and one half million homes using LP gas and of that total about 1.8 million are using it for space heating.

Solving Your Business Problems—



ARTHUR ROBERTS
Pompton Lakes, N. J.

"SHALL I calculate a charge for interest on investment in my costs?" is a question *Indoor Comfort* dealers and sheet metal contractors frequently ask us. The charging of interest on account of the capital or surplus invested in a business for the purpose of entering this charge in the costs of doing business is a moot subject, even among cost accountants. Some advocate making the charge, others are against it. Some dispute the fact that business should pay interest on the capital invested in it, contending that the profit on sales is all the business should be asked to pay. Proponents state that a business must pay interest on borrowed capital, so why not pay on the investment in the business? Others contend that borrowed capital does not receive profits and it is therefore in the same category with interest on business investment. Some businessmen enter the charge in costs, claiming that they could get 5 per cent interest on the money if they invested it conservatively elsewhere, hence, their own enterprises should pay in excess of this percentage and the only way to assure this is to make sales carry the interest on the capital invested in the business.

Set Up Separate Account

The usual bookkeeping routine is to enter interest on business investment under overhead expense and credit an "Interest on investment" account in the ledger. Profits are increased indirectly by the amount

of this charge and although the management cannot deduct this as an expense on its income tax return, it must pay on the additional income earned thereby. In a locality where competition is keen and prices must be kept down to get topflight volume, the seller who does not include this charge in costs can sell for less than the seller who lists this charge. Today, with money abundant and full employment, a charge for interest on business investment may not affect sales adversely, but if we return to a semblance of prewar business activity and competition, then the inclusion of this charge in costs, if it begets higher selling prices, may curtail sales. We are not taking sides pro or con, but the sheet metal contractor and *Indoor Comfort* dealer should understand all angles of the subject, otherwise, it may lead to confusion on sales or earnings. A businessman must be sure that his net worth is computed accurately if he charges interest on investment in his costs, otherwise, he will compute this expense too high or too low.

What to do with goodwill, excessive bad debts and the short-costing of depreciation on business buildings, working equipment, trucks, etc.? These are queries we often get from perplexed contractors who have goodwill listed on their balance sheets at a substantial value, who have a heavy backlog of bad debts and want to write them off or who have written off too little for depreciation and now want to bring their deprecia-

It Can Be Done!

Those little gremlins that you see on the opposite page become very real to some contractors. Yet many of the things which are most troublesome are easily handled when approached correctly. The author gives you the right approaches.

ble assets in line with a current appraisal. Such items, when written off, should be charged to net worth or surplus, not to profit and loss. If you failed to take sufficient depreciation in prior years, you cannot get a tax deduction for the difference between estimated wear and tear and actual wear and tear, neither can you get a tax deduction for the write-off of goodwill. You can get a tax deduction for bad debts if they are written off in the year they are ascertained worthless. You may lose out on a deduction for bad debts if you keep them open on your books indefinitely, which some members of this industry have found out through sad experience. The best way to hedge against this oversight is to set up a reserve for bad debts and charge off a certain percentage yearly based upon the average bad debt loss over prior years. However, if you have been using the direct method, charging off bad debts as they become bad, you cannot change to the reserve method unless you get the consent of the Commissioner of Internal Revenue. The reserve method has a big advantage in costing because it equalizes bad debt expense.

Investments in Leased Property

Dealers and contractors sometimes lease properties and make improvements thereon. In this connection, they frequently ask us how to account for this expenditure. They should depreciate the investment over the years of the lease or the useful life of the improvement and thus include the charge in their operating costs to get reimbursement in their selling prices. They can get a tax deduction on the same basis. If the improvement is written off in one lump sum, it should be charged to net worth or to surplus, but the Treasury will not permit a deduction except on the basis of its depreciation.

Sometimes the Treasury will refuse to allow more than a certain rate of depreciation and the businessman may feel that this isn't enough to cover the actual wear and tear.

"What can I do?", they often ask. "Use the permissible deduction in my costs and lose money or increase the deduction to get equitable reimbursement from customers? How shall I solve the problem?" Charge whatever you consider a reasonable depreciation in

your costs. As long as your books reflect actual income and outgo so that you pay the correct tax, they may contain accounts that are not permissible deductions on the tax returns. The income tax laws do not always square with conservative accounting and business management. You may enter in your costs any legitimate charges that will help you run your business with maximum efficiency. When you prepare your return, include only the figures that the Treasury expects you to list to arrive at the correct amount of tax due the government.

Loss on Inventory

The handling of loss on inventory confuses many in this industry. The proper way to handle such a loss is to estimate the average annual loss to purchases, say it is $\frac{1}{2}$ of 1 per cent, then charge this operating expense proportionately each month. Such charges are not deductible on the tax return because the year-end inventory reflects this loss, and so, it cannot be taken twice. The same applies to the preparation of the profit and loss statement. For job costing purposes this charge is desirable to cover errors, theft, damage, waste and other inventory losses common to all businesses of this kind, but see that it doesn't duplicate itself in the financial accounts where income and outgo are recorded because the valuation of year-end inventory takes care of this loss. Based on experience figures, a charge for non-chargeable time should be entered in costs. This is time that is not chargeable to jobs for one reason or another, cleaning up the shop, time spent waiting to go on a job because materials are not on hand, etc.

Use Cash Discounts

Many businessmen who talk much about the profit on sales, earnings on investment in the business and the returns on outside investments overlook one of the most profitable investments in the realm of barter. That is the commercial discount. Too few members of this industry take advantage of it. In some cases, it pays to borrow from the bank to get cash discounts. The following table shows how much the debtor can clean up by discounting his bills to the suppliers.

(Please turn to page 124)

\$mall Ads \$ave Dollars

ERNEST W. FAIR
Bristow, Oklahoma

Here Are Some Valuable Tips on Using Small-Size Ads Effectively.
A Campaign of Distinctive Little Ads Can Be Worth Far More
Than It Costs.

ALMOST every contractor in this industry knows that small ads offer the best opportunity for promotion of his business within the budget he can afford to set up. Those who have tried to use large space at periodic intervals have seldom found it profitable to stretch their budget in this manner. Advertising must be consistent if it is to be successful.

The small ad offers the opportunity to be a consistent advertiser. But there are many pitfalls in the use of these small ads. Dollars can be speedily wasted by lack of careful planning.

In the paragraphs to follow are a number of suggestions taken from the experience-stories of dealers in every section of the country; men who have used small advertisements with continued success. Most of these lessons have been learned the hard way.

1. *Be consistent.* Spotty use of advertising seldom pays off; it is the day-to-day pounding away that establishes the name and services of a company. When the budget has been set up it should be so allotted that the amount of space to be used in each insertion will permit as frequent insertions as possible. Many *Indoor Comfort* dealers set aside two per cent of their gross for such advertising.

2. *Pick best days of the week.* Each dealer knows his own territory or his own city best. Good planning requires a thorough study to show when most people are near the salesroom or when the opportunity for their being nearby is greatest. Those are the days which are *must* days for his advertising.

3. *Make the ads different from others.* Ordinarily, small ads are buried too easily because of the multiplicity of them in the average publication. To prevent this it is good policy to deviate from standard forms with small illustrations of an unusual nature or clever catch-lines.

4. *Use illustrations but don't buy them!* An illustration is excellent in an average small advertisement. The least expensive way to secure them is to use the mat service provided free for advertisers by almost every newspaper. These contain thousands of unusual

small cuts which can be adapted to an eye-catching idea for an advertisement.

5. *Buy a schedule.* Advertising should be a regular routine of business; just like the rent or the utility bill. Rates are always cheaper on long contracts, more expensive on a day-to-day basis.

6. *Be brief and to the point.* It is never wise to seek to tell a story in a small advertisement. Messages which are short and to the point make an advertisement of greater effectiveness, particularly when small space is being used.

7. *Design for plenty of white space.* No major advertiser crowds his space with copy and pictures—there is always ample white space to set off the layout and attract attention. The average small ad appearing in newspapers today is, to the contrary, loaded with type. White space distinguishes any size ad from others on the same page; gets more attention.

8. *Use a signature plate.* People remember names of firms better when they are written out in an unusual type or a signature. These cost very little. Mats can be made from the original cut and one actual cut will last many months.

9. *Get good positions.* Newspaper ad offices are like any other business establishment and in matter of position on the page it's the man who insists on attention to his advertisement who gets the best position. A buried ad is worthless; keep ad salesmen from burying small ads always.

10. *Give your small ad a purpose.* Just filling a certain space regularly may be costly. A small ad should seek to sell the name of the firm, an idea, a special offer or something unusual about its business. Small ads are excellent for this purpose.

11. *Vary copy frequently.* Most newspapers make special rates for small ads when copy is unchanged over a long period of time. That's a good way to save a few advertising dollars but if the idea remains in use

(Please turn to page 126)



RESIDENTIAL AIR CONDITIONING *Section*

INDOOR COMFORT — IN ALL SEASONS
FOR HOMES AND SMALL BUSINESSES

What Do **YOU** Want in the Heating Line You Handle?



A Complete Line—Nationally Known and Accepted

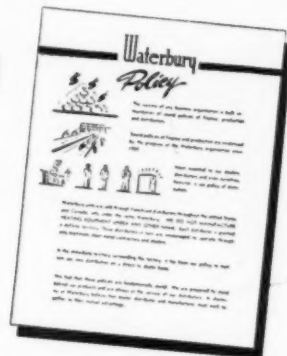
Coal, oil or gas fired units—gravity or forced air—the right size for every home from the smallest to the largest. Nationally advertised — with established consumer acceptance.

Waterbury

 Has it!

A Sound Dealer Policy

A clearly stated policy toward distributors and dealers that is strictly carried out is essential as a foundation for a lasting and profitable relationship. It should be in print and available to every dealer and distributor.



Waterbury

 Has it!

Factory Interest in Every Unit

Every distributor should have resources available to every dealer that will insure satisfactory installation and operation of every unit.

The factory should have the means to give real support to this program.



Waterbury

 Has it!

The Answer to Drafts and "Cold 70" Waterbury Has It!

THE MASTER BLOWERTROL

We are convinced that this is the best means of achieving true continuous blower operation—it means more satisfied customers—the end of stratification and "Cold 70." Combined with precision-engineered Waterbury Air Conditioners, it is Modern Perfection in warm-air heating.



"IT'S WHAT'S UNDER THE CASING THAT COUNTS!" and

Waterbury

 Has it!

THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.



Fig. 1. — Exterior view of test bungalow

Temperature Distribution In a Test House With Various Heating Devices*

RICHARD S. DILL and PAUL R. ACHENBACH
Washington, D. C.

Uniformity of temperature throughout houses is a tacitly accepted American ideal of heating that is seldom attained in practice. The tests described in the series starting with this article were performed to determine how close to the ideal it would be possible to come in a low cost house.

PERFORMANCE of heating systems has usually been judged from data gathered during laboratory tests of individual parts of the heating device alone or by the experience of heating engineers.

The desirability of a heating system depends on its first cost and economy of operation, on the amount of smoke, soot, or dirt occasioned by its operation, on the amount of care and attention it requires, and on the temperature distribution it yields throughout a house. The last characteristic might be called the quality of its performance.

Information on efficiency, soot deposition, and attention requirements of a heating device can be obtained by laboratory tests, but quality of performance, as defined above, can only be determined by actual trial in a house. Therefore, a full-scale house was constructed at the National Bureau of Standards in which entire heating systems could be installed.

One of the main purposes of the work in this house was to obtain data on temperature distribution attained with various heating devices intended for low-cost houses so that estimates could be made of the performance of these heating methods in similar houses designed for occupancy. The house is a one-story bungalow designated as the test bungalow in this report. An exterior view of the test bungalow is shown in Fig. 1.

It is now commonly accepted that dry-bulb temperature is not the only important factor affecting

*—Building Materials & Structures Report BMS 108, National Bureau of Standards

human comfort. It is known that such factors as relative humidity, air velocity, and the amount of radiant heat present in an environment affect the degree of comfort at any given dry-bulb temperature. However, these several factors are frequently not subject to independent control in the present conventional heating systems and especially for those in the lower cost range. Consequently, for many systems the possible combinations of these several factors that determine the comfort are very limited. Various instruments intended to include radiant heat and other factors in evaluating the comfort of environments have been developed through the years, but no such device has yet attained general usage.

Whether or not some other factor more accurately indicates comfort conditions in heated buildings, uniform dry-bulb temperature throughout the building appears to be the generally accepted standard. Uniformity of temperature is never quite achieved in practice, and the data presented herein indicate what departures from uniformity are to be expected in houses similar to the test bungalow when heated with different types of heating devices. Data in this report are intended to assist in determining the degree of variability in temperature distribution that can be or should be tolerated.

Appliances tested include a hot-water heating system, floor furnaces located in several different positions, oil and gas space heaters with fans, and electric and oil burning warm air furnaces.

Test Equipment

The test bungalow at the National Bureau of Standards is similar to house B, described in Technical Bulletin No. 4, Principles of Planning Small Houses, issued by the Federal Housing Administration. This bungalow has four rooms and bath, floor plan of which is shown in Fig. 2. A small hallway in approximately the middle of the house connects the rooms. Adjacent to the hallway is a utility closet, intended to accommodate the heating equipment. All rooms except the bath, including the hallway, are provided with movable ceilings that can be adjusted to any height between 7 ft and 9 ft by permanently installed overhead screw jacks. During the tests described in this report, the ceiling height was 8 ft. The bungalow is provided with a full basement in which heating systems can be installed for comparison with devices located on the first floor.

The outside walls of the test bungalow are conventional in construction and consist of 2 by 4 in. studding with sheathing and lap siding on the outside, separated by a layer of building paper, and ½ in. gypsum board on the inside. The walls are not insulated. The bungalow has a double floor of 1 in. pine. Building paper is laid between the subfloor and the finish floor in the conventional manner. The ceiling consists of ¼ in. plywood supported by a framework of 2 by 4 in. timbers. A blanket of wood-fiber insulating material 2 in. thick was placed on top of the plywood. The windows are double hung except the one in the bathroom and one of those in the kitchen. Window frames and sash are of

Fig. 2. — Floor plan of test bungalow

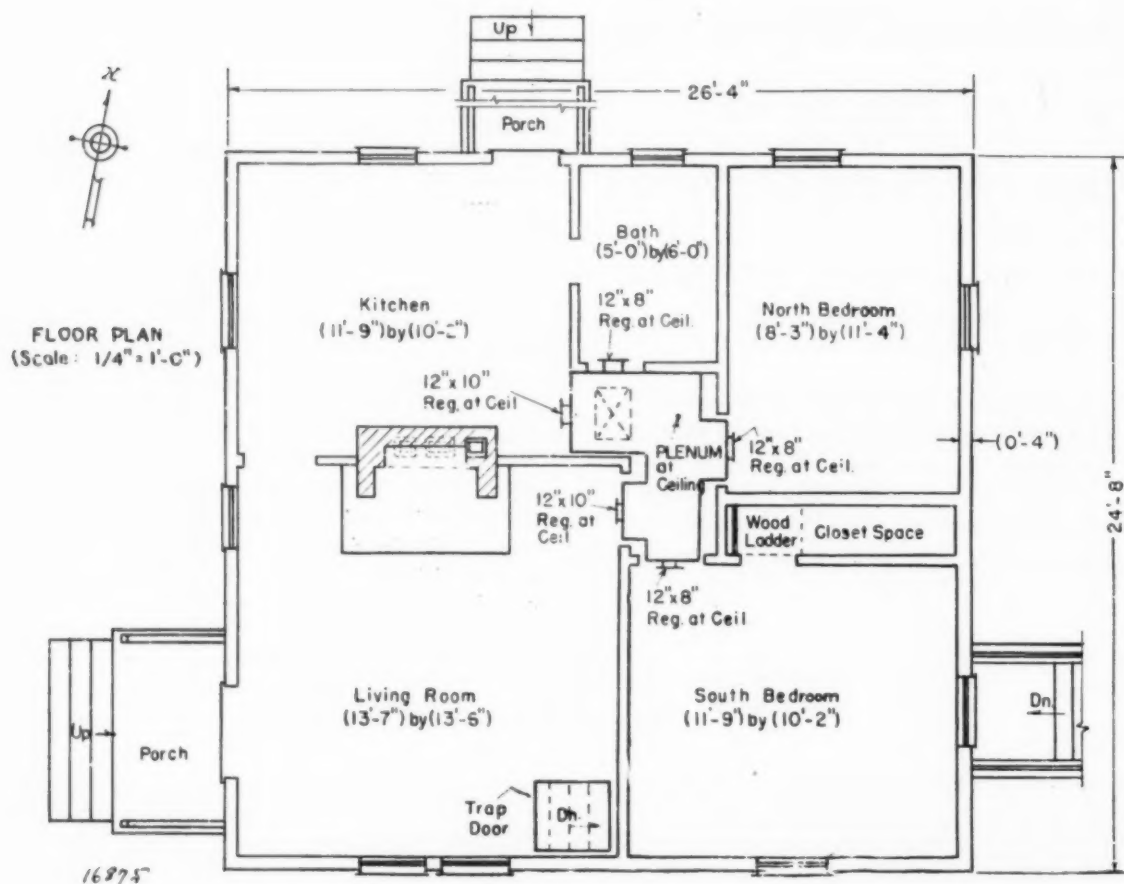


TABLE 1.—Test results using electric warm air heater with air distributed by gravity circulation.

Height above Floor	Kitchen	Living room	North bedroom	South bedroom	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 12 to 14 F)							
in.	°F	°F	°F	°F	°F	°F	°F
2.....	58	54	60	58	59	58	6
30.....	67	64	65	65	69	66	5
60.....	78	75	78	77	79	77	4
78.....	97	80	93	85	93	90	17
94.....	114	86	109	96	119	105	33
Basement...	.....	.....	.....	.....	.....	40	.....
Attic.....	.....	.....	.....	.....	.....	.....	.....
Temperature Difference							
2 to 60.....	20	21	18	19	20	19	.....
2 to 94.....	56	32	49	38	60	47	.....
Room Temperature (Outside Temperature 28 to 32 F)							
2.....	64	60	66	65	65	64	6
30.....	72	70	72	71	74	72	4
60.....	81	78	80	79	82	80	4
78.....	96	82	94	87	95	91	14
94.....	111	81	106	97	120	103	39
Basement...	.....	.....	.....	.....	.....	42	.....
Attic.....	.....	.....	.....	.....	.....	.....	.....
Temperature Difference							
2 to 60.....	17	18	14	14	17	16	.....
2 to 94.....	47	21	40	32	55	39	.....

TABLE 2.—Same device as in Table 1 with air distributed by intermittent forced circulation (780 cfm)

Height above Floor	Kitchen	Living room	North bedroom	South bedroom	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 8 to 10 F)							
in.	°F	°F	°F	°F	°F	°F	°F
2.....	53	52	57	58	53	55	6
30.....	70	70	69	70	69	70	1
60.....	82	81	79	82	82	81	3
78.....	85	83	82	89	103	88	21
94.....	97	87	79	90	115	94	36
Basement...	.....	.....	.....	.....	.....	35	.....
Attic.....	.....	.....	.....	.....	.....	.....	.....
Temperature Difference							
2 to 60.....	29	29	22	24	29	26	.....
2 to 94.....	44	35	22	32	62	39	.....
Room Temperature (Outside Temperature 28 to 32 F)							
2.....	60	57	61	60	59	59	4
30.....	70	68	69	69	70	69	2
60.....	78	75	76	79	78	77	4
78.....	82	78	81	84	95	84	17
94.....	91	82	80	86	108	89	28
Basement...	.....	.....	.....	.....	.....	48	.....
Attic.....	.....	.....	.....	.....	.....	.....	.....
Temperature Difference							
2 to 60.....	18	18	15	19	19	18	.....
2 to 94.....	31	25	19	26	49	30	.....

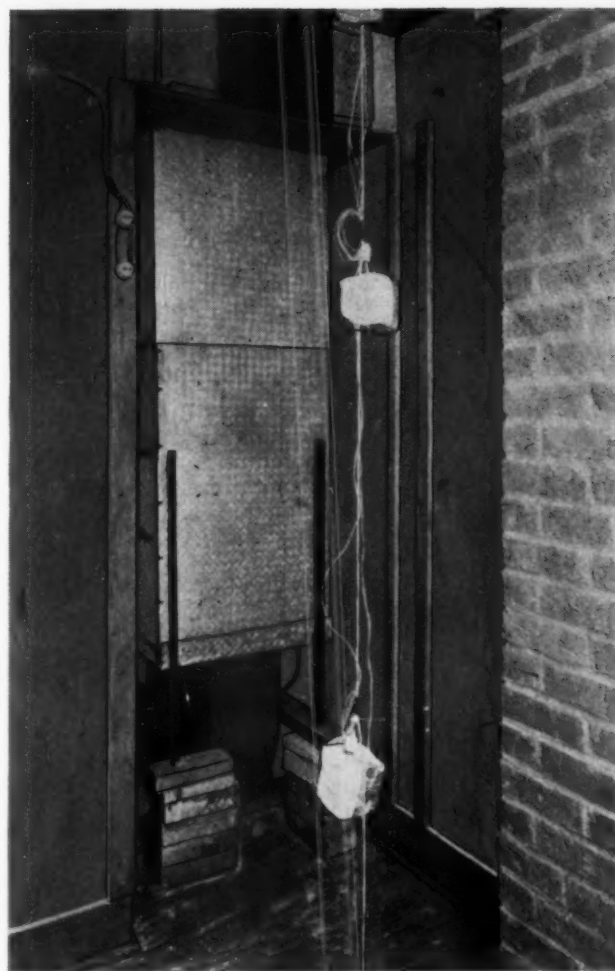


Fig. 3.—Electric heater with blower attached

wood. There is no weatherstripping around windows or doors.

Data Recorded

Data on temperature conditions inside the bungalow were recorded by various types of instruments. Heat-transfer coefficients for floors, side walls, and ceilings were measured by fastening heat-flow meters of the Nicholls type to the surfaces. Coefficients were expressed in terms of Btu per sq ft per hr per deg F difference, and were obtained with an outside wind velocity of approximately 3 mph. Expressed in these units, the coefficients were: for side walls from inside to outside, 0.276; for floor from upper floor surface to basement air, 0.363; and for ceiling from under surface of ceiling to attic air, 0.166.

Position of Thermocouples

Thermocouples suspended from the ceiling by strings were used to measure air temperatures in the test bungalow. Five strings were hung in each room, one at the center and one midway between the center and each corner of the room. Five thermocouples were attached to each string, at points 2, 30, 60, 78, and 94 in. above the floor. These thermocouples were insulated to minimize the effect of cycles of the heater and were wrapped in aluminum foil to reflect radiant heat.

TABLE 3.—Same electric heater with intermittent forced circulation (1,460 cfm)

Height above Floor	Kitchen	Living room	North bedroom	South bedroom	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 16 to 20 F)							
in.	°F	°F	°F	°F	°F	°F	°F
2.....	58	58	62	61	54	59	8
30.....	71	71	69	72	68	70	4
60.....	77	75	73	78	77	76	5
78.....	79	77	76	82	88	80	12
94.....	88	79	75	82	99	85	24
Basement...	.....	.....	.....	.....	.....	36	.....
Attic.....	.....	.....	.....	.....	.....	.....	.....
Temperature Difference							
2 to 60.....	19	17	11	17	23	17	.....
2 to 94.....	30	21	13	21	45	26	.....
Room Temperature (Outside Temperature 22 to 26 F)							
2.....	59	55	60	60	59	59	5
30.....	69	70	69	67	70	69	3
60.....	75	74	73	74	76	74	3
78.....	77	76	75	75	79	76	4
94.....	86	79	75	76	81	79	11
Basement...	.....	.....	.....	.....	.....	38	.....
Attic.....	.....	.....	.....	.....	.....	.....	.....
Temperature Difference							
2 to 60.....	16	19	13	14	17	15	.....
2 to 94.....	27	24	15	16	22	20	.....

TABLE 4.—Same electric heater with continuous forced circulation (1,460 cfm)

Height above Floor	Kitchen	Living room	North bedroom	South bedroom	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 34 to 38 F)							
in.	°F	°F	°F	°F	°F	°F	°F
2.....	62	64	61	64	60	62	4
30.....	70	69	68	70	68	69	2
60.....	72	70	69	72	72	71	3
78.....	75	71	70	73	77	73	7
94.....	75	71	68	73	76	73	8
Basement...	.....	.....	.....	.....	.....	45	.....
Attic.....	.....	.....	.....	.....	.....	.....	.....
Temperature Difference							
2 to 60.....	10	6	8	8	12	9	.....
2 to 94.....	13	7	7	9	16	11	.....
Room Temperature (Outside Temperature 40 to 45 F)							
2.....	64	70	64	65	62	65	8
30.....	71	72	68	71	69	70	4
60.....	73	73	69	72	72	72	4
78.....	74	74	70	72	73	73	4
94.....	74	73	70	72	72	72	4
Basement...	.....	.....	.....	.....	.....	44	.....
Attic.....	.....	.....	.....	.....	.....	68	.....
Temperature Difference							
2 to 60.....	9	3	5	7	10	7	.....
2 to 94.....	10	3	6	7	10	7	.....

Additional thermocouples were used to determine temperatures of top and bottom surfaces of the floor, inside of exterior walls, outside of exterior walls, basement air, and attic air.

A multiple-point resistance thermometer recorder was used to obtain a continuous record of the temperature at the center of each room, 30 in. above the floor.

A room thermostat having a bimetallic temperature-sensitive element controlled the operation of automatic heating devices. The thermostat was located on the inside wall of the living room, 30 in. above the floor.

Outdoor conditions in the vicinity of the test bungalow were recorded by the type of instruments employed by the United States Weather Bureau. These instruments included a hygrothermograph for recording temperature and relative humidity, a mercury-in-glass thermometer for registering the temperature, a three-cup anemometer with integrating dial for indicating the wind velocity and integrating the total air movement, and a weather vane for indicating the wind direction.

Test Specimens

Temperatures in the test bungalow were observed when heat was being supplied in turn by an experimental electric heater, an oil burning warm air furnace, a jacketed gas fired space heater, a jacketed oil fire space heater, a single gas burning gravity floor furnace, two gas burning gravity floor furnaces, a gas burning floor furnace with forced circulation, an oil burning gravity floor furnace, and a conventional gravity flow hot water heating system.

1. ELECTRIC HEATER

The experimental electric heater consisted of a vertical rectangular metal duct, 17 by 23 in. in cross section, lined with transite board, having 30 socket-type electric heaters, each of 660-watt capacity, mounted on the inside. The bottom of the heater was open to receive return air from the house, and the device was supported 12 in. from the floor by legs. The warm air outlet of the heater was connected by a sheet metal duct to a plenum chamber overhead.

The plenum chamber was approximately 11 in. high by 24 in. square. Warm air was supplied to each room from the plenum by a short duct. The plenum and ducts occupied the space in the hallway between 7 ft and 8 ft above the floor. The shape and location of the plenum chamber and ducts are shown on Fig. 2.

The results obtained on this heating device are summarized in tables 1 to 4 of this report.

For tests with forced circulation, the heater was raised to accommodate a centrifugal blower that was installed underneath it. A magnetic switch with a suitable relay permitted the thermostat to start and stop both the electric heater and the blower. The blower circulated air through the heater, plenum chamber, ducts, and rooms. A photograph of the experimental electric heater with the blower attached is shown in Fig. 3.

The electric heater was used for tests with gravity circulation, with intermittent forced circulation of air at rates of 780 cfm and 1,460 cfm, and with continuous forced circulation of air at a rate of 1,460 cfm.

Correct Practice In Oil Heating

Part XIV *[[A Check List of Oil Heating Problems—List of Proper Solutions.]]*

By J. J. Mirabile

Delco-Heat Division

Elliott-Lewis Co., Philadelphia

I. Burner motor does not start:

Probable Cause

- a. Blown fuse
- b. Burner switch in off position
- c. Burner relay safety switch in 'off' position
- d. Thermostat setting is below room temperature
- e. Limit control is satisfied
- f. Dirty control contacts
- g. Open motor overload switch
- h. Low water cut off in 'off' position

Correction

- a. Replace fuse—also check reason for short circuit or overloaded circuit—check all wiring and splices.
- b. Move switch to 'on' position.
- c. Follow procedure as outlined in checking the relay.
- d. Raise setting above room temperature.
- e. Raise setting or check with test light if power is available to limit control.
- f. Clean all open type contacts with hard writing paper (do not use abrasive paper).
- g. Reset overload and check for cause—bad bearing, open starting switch, bad pump or dry bearings.
- h. Add water to proper level.

II. Burner motor goes on and off:

- a. Thermostat differential set too close
- b. Thermostat contacts not closing in proper sequence
- c. Relay contacts not closing according to proper sequence
- d. Loose wiring which causes relay to stop and re-cycle
- e. High limit differential set too close

- a. Adjust differential (See manufacturer's instructions).
- b. Adjust contacts—also check red, white, and blue wires; they must be wired color to color.
- c. Follow Mfg.'s instructions before adjusting starting and operating (hot and cold) contacts.
- d. Check all connections—place jumper wire across red, white and blue contacts to test low voltage circuit.
- e. Increase differential between cut in and cut out settings.

III. Oil fumes when burner starts (slight puff):

- a. Electrodes are either in oil spray or too far from spray
- b. Obstruction in smoke pipe or chimney
- c. Clean-out doors not tight
- d. Back pressure in furnace
- e. Air in suction line

- a. Set electrodes $\frac{1}{8}$ in. apart and out of the oil spray. Use a flame mirror to determine correct setting.
- b. Check chimney, smoke pipe—draft regulator and boiler baffles.
- c. Seal all possible air leaks—air should enter furnace only through the burner.
- d. Proceed as in "b" and after removing obstruction set draft governor to .02 in. draft over the fire.
- e. Check for air leaks near pump connection.

IV. Oil ignites but goes out when ignition goes off:

- a. Combustion chamber too long
- b. Dirty nozzle—flame too small

- a. Redesign chamber to more practical proportion. See recommended combustion chamber sizes.
- b. Clean nozzle and nozzle strainer.

- c. Nozzle too small for combustion chamber
- d. Air shutter open too wide for the size nozzle
- e. Air cone dropped off burner air tube
- f. Air tube too close to combustion chamber floor, requiring excess air to burn the oil without smoky fire
- g. Excess draft

V. Burner motor will not stop automatically:

- a. Short circuit in thermostat wiring
- b. Poor thermostat location, near drafty, open windows or on cold wall
- c. Improper wiring
- d. Limit control set too high (When operating the burner in place of a thermostat)

VI. Burner has 'after fire' when motor stops:

- a. Leaky cut off valve
- b. Air in nozzle pipe line
- c. Oil strikes air cone
- d. Nozzle too close to combustion chamber floor
- e. Loose nozzle or nozzle body

VII. Oil odor:

- a. Poor draft
- b. Overfiring furnace
- c. Excess air
- d. Furnace room not ventilated
- e. Forced warm air furnace with unconnected returns and insufficient openings into basement
- f. Back pressure in furnace

VIII. Smoky fire:

- a. Not enough air
- b. Dirty fan
- c. Motor not up to speed
- d. Combustion chamber not high enough
- e. Overfiring combustion chamber
- f. Atomized oil striking floor or side of furnace or chamber may also cause carbon formation

IX. Radio interference:

The most popular transformers have a radio interference eliminator (condenser) built into the transformer. The metal condenser case is grounded to the metal transformer casing. This, therefore makes it necessary to ground the transformer to a water pipe. This may be done with armoured cable. Any radio interference created by the high tension leads which may back up towards the house wiring will be collected by the condenser and grounded.

- a. High tension leads may be grounding
- b. Cracked electrode porcelain
- c. Poor ground connection causing radio interference
- d. Electrodes may be set too far apart

X. Consuming too much oil:

- a. Excess air
- b. Undersized furnace or poor heat distribution

- c. Check heat loss and install correct nozzle.
- d. Close down air shutter to suit nozzle size.
- e. Install new air cone.
- f. Reset burner air tube to proper height above floor—pit combustion chamber if necessary—then close down air shutter opening.
- g. Set draft governor to .02 in. draft over the fire.

- a. Disconnect red, white and blue wires at relay, if burner stops, check entire thermostat control circuit.
- b. Thermostat should be moved to more suitable location.
- c. Check wiring—use wiring diagram if unfamiliar with wiring.
- d. Check cut in—cut out, and differential of the control.

- a. Replace cut off valve assembly—See Pump Mfg.'s instructions.
- b. Drain all oil from nozzle pipe to eliminate air pocket.
- c. Check with flame mirror and change nozzle position to permit oil spray to clear air cone.
- d. Raise burner air tube to proper height or pit combustion chamber.
- e. Check with flame mirror and correct by tightening nozzle and replacing nozzle body if necessary.

- a. Check smoke pipe, chimney, furnace bames, etc.
- b. Cut down nozzle size.
- c. Close down air shutter opening.
- d. Provide opening to the outside.
- e. Increase return air openings into basement, or connect returns to unit.
- f. Check baffles, overfiring, plugged chimney. Draft governor may be opened too much.

- a. Increase air shutter opening.
- b. Clean fan.
- c. Repair or replace motor.
- d. Build up higher combustion chamber walls.
- e. Cut down nozzle or increase chamber size.
- f. Raise burner air tube, use narrower angle nozzle spray.

- a. Install new leads.
- b. Replace porcelain or install new electrodes.
- c. Tighten all BX conduit connections from transformer to ground clamp.
- d. Set to $\frac{1}{8}$ in. gap.

- a. Make an analysis of the heating plant to determine CO₂, stack temperature and draft over the fire.
- b. Calculate the heat loss of the house. Determine heat required per room, check the heat loss against avail-

- c. Poorly constructed building
- d. Oil consumption for the season of the year seems high

- e. Thermostat poorly located
- f. High stack temperature

XI. Not enough heat:

- a. Check the thermostat

- b. Firing rate

- c. Poor piping system

XII. High stack temperature:

- a. Overfiring furnace

- b. Short flue travel

XIII. Noise:

- a. Combustion noise

- b. Mechanical—

- 1. Motor noise

- 2. Noisy pump

- 3. Noisy burner

- 4. Tank hum

XIV. Pump does not work:

- a. Take vacuum gauge reading
- b. Check oil in tank
- c. Are valves open in suction line?
- d. Check pump seal
- e. Check for air leaks in suction line

able heat input per room. Check total heat loss against furnace size.

- c. Insulate building—install storm windows.

- d. Check the number of degree days during the period in question against actual oil consumption. Remember to deduct oil remaining in tank from total gallons purchased.

Percentage of Degree Days per mo.

Sept.	2.2	Feb.	18.0
Oct.	5.2	March	13.0
Nov.	11.3	April	9.1
Dec.	16.2	May	3.0
Jan.	20.9	June	1.0

- e. Move thermostat from drafty or cold wall location.

- f. Seal air leaks at crevices and cracks around furnace—install baffle, check firing rate.

- a. Thermostat location may be over warm wall surface, over radios, table lamps, etc. Thermostat differential may be set too close.

- b. Consider house heat loss, pipe losses in determining firing rate and proper distribution. Balance system.

- c. Check pitch of piping, pipe sizes, insulation of leaders, etc. Is furnace large enough to handle heat losses?

- a. Cut down firing rate to suit the load. Never fire furnace at less than 70 per cent of its rated output. Never fire it above its rated output.

- b. Install baffle to increase flue travel.

- a. Furnace may have small combustion volume. Check firing rate, nozzle and air cone setting. Do not over-fire furnace, insulate combustion chamber, change air mixing parts on burner.

- b.

- 1. Line up motor, pump and pump coupling. Oil motor.

- 2. Check for leaks in suction line, take vacuum reading with vacuum gauge. If vacuum is high, clean filter and strainer.

- 3. Burner air tube may be striking furnace casing, grate bar or other portion of furnace.

- 4. Install anti-hum valve and set vacuum in suction line to 1½ in. of vacuum.

(Please turn to page 132)

Pattern Development for Air Conditioning Fittings

WILLIAM NEUBECKER
New York, N. Y.

Layout of Offsets

OFFSETS, elbows, branches, intersections and other fittings are required in the construction and erection of heating and ventilating ducts. Care must be taken that the area of each fitting, whether round, square or rectangular, is maintained throughout its entire length. Fig. 1 and 2 on the full page drawing illustrate errors that are liable to occur when laying out offsets, elbows and other fittings. Note that the two offsets Fig. 1 and 2 have the same lengths and widths, indicated by the letter A and are equal, but as the offset increases the width across the slanted part of the fitting is reduced as shown by D and E respectively. To overcome this error a miter or joint line must be located, which will make the offset equal in width from one end to the other as shown in Fig. 3.

Locating Center Line

In Fig. 3 F-G-H-J is the center line of the offset. Take any random distance such as G to F and locate it on the center line from G to e. Now with any radius using F and e as centers, draw the intersecting arcs at f and g establishing the miter line f-G-g. On either side of the center line F-J draw the outline of the offset with the required dimensions, whether the duct is round, square or rectangular.

Shop Rules

Some shops have established methods of laying out curved offsets. In some cases it becomes necessary to know the rule when a double curved offset must be drawn to fit in given dimensions. These rules will be explained as we proceed. Fig. 4 shows a double curved offset which must fit in given dimensions of equal length and width as shown by 1-2-3-4. At points 1 and 3 set off the width of the offset shown as 1-5 and 3-6. Locate points a and b at the middle of 1-5 and 3-6. Bisect the line a-c by the miter line 7-J as follows: Select a radius of any length and using a and c as centers, intersect arcs at e and f, through which draw a line to intersect the upper line 1-2 at 7. In a similar manner bisect the line b-c by the miter line g-h which intersects the lower line 3-4 at 8. Draw a line from 7 to 8. Using 7 as center with radii equal to 7-5 and 7-1, draw arcs to intersect the line 7-8 at 9 and 10. In a similar manner, using 8 as center with radii equal to 8-6 and 8-3, draw arcs which will meet the arcs on the

dividing line 7-8 at 9 and 10. Then 1-6-3-5 will be the correct double curved offset. This offset can be made in two parts using either 1-5-9-10 or 3-6-10-9 as these are identical.

If the offset is in a round duct, simply drop a vertical line from 5 at the top to intersect the miter line e-f at k and erect a vertical line from 6 at the bottom to intersect the miter line g-h at i. Then 1-J-i-6-3-j-k-5 would be the offset for the round duct. The square and rectangular ducts would be constructed by seaming the corners and the round offsets would be locked and the miter joints peened.

Fig. 5 shows an offset whose length 1-4 is greater than its projection 1-2. Using the same principle as in the previous problem, the outline of the offset is developed. This construction in Fig. 5 corresponds to Fig. 4 with the exception that the bisection of the lines a-c and c-b may be replaced by the use of a square, erecting perpendicular lines at these points.

Follow Right Angle Method

Both methods are true and accurate. When the offset is of large dimensions, the right angle method should be followed as the use of the steel square is superior to the bisection method since it avoids the use of long radii.

Fig. 6 shows how to draw an offset in a true square with straight duct between the angles shown by h-i-g-j. Set off the width 1-5 and 3-6. In this case we assume that the radius for the throat will be equal to one-half the width. Therefore, take this half width and set it off from 5 to a and from 6 to b. With a-5 as a radius and a and b as centers, draw the arcs 5-c and 6-e respectively. Again using a and b as centers with a radius equal to a-1 at the top, draw the arcs 1-d and 3-f. Now tangent to the arcs 5-c and 3-f at the right and 1-d and 6-e at the left, draw lines as shown by h-i and j-g respectively. At right angles to h-i and j-g draw lines from the center points a and b to intersect the arcs 1-d at j and 3-f at i. Then 1-5-3-6- will be the desired offset.

Fig. 7 shows another type of offset which requires straight duct in its layout. Its development follows that of Fig. 6 in every detail. The only distinction is that the length of the fitting is greater.

Air Conditioning Pattern

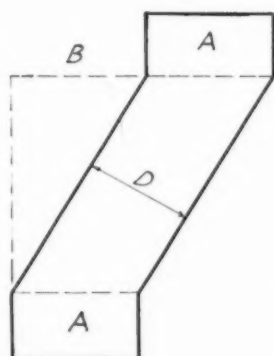


FIG. 1

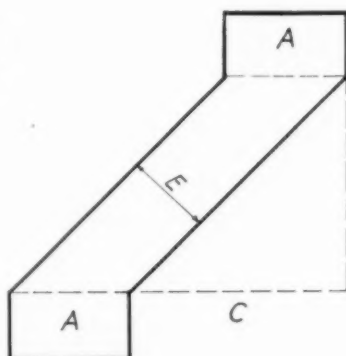


FIG. 2

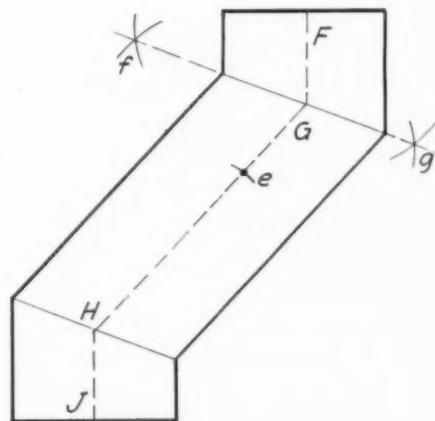


FIG. 3

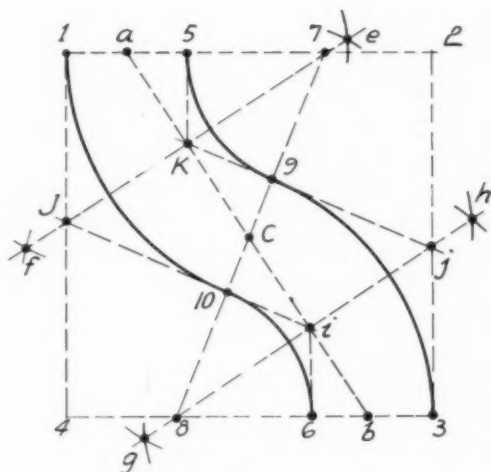


FIG. 4

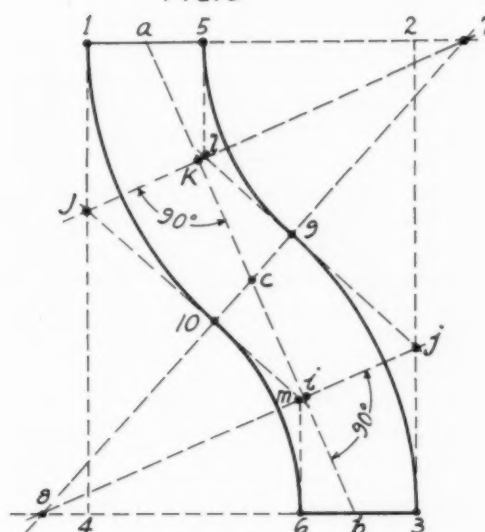


FIG. 5

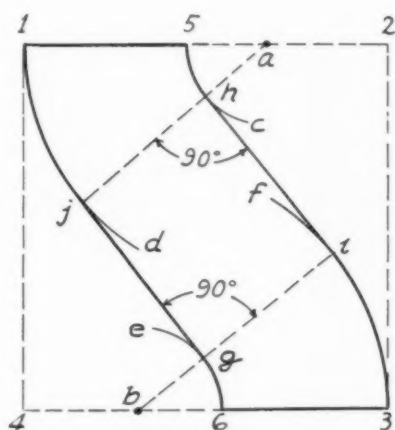


FIG. 6

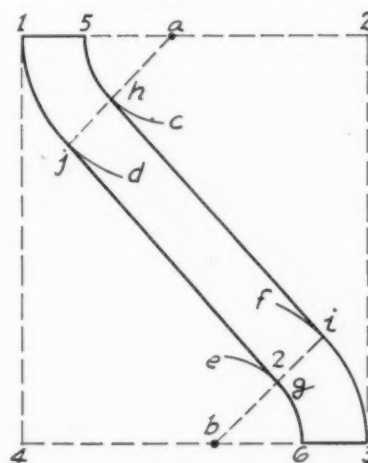


FIG. 7

Layout of Offsets — Wm. Neubecker

OPEN FOR DISCUSSION

Air Conditioning— No Luxury in Southwest

FROM the time of earliest civilization man has sought after human comfort. From the time of the cave man, whose habitation in a hillside afforded shelter against the bleak winds of winter and the scorching rays of the summer sun, through the time of the Pharaohs who piped water from mountain streams into their palaces for comfort against the Egyptian summer heat, on down to the present, man has expended great effort and time for his own comfort.

These early seekers did not have our modern mechanical means of affording themselves year around comfort from the elements of nature; but largely through their endeavors and determination to have these benefits, we now can enjoy living comforts heretofore unknown. Due to lack of latest information on proper and modern home construction, however, thousands of dollars are needlessly wasted by home owners.

Now that building restrictions are fast being lifted through greater production of materials required for home construction it seems well that those who plan to construct new homes or remodel be cautioned of some of the modern construction features they should consider to provide themselves with greater future comfort and economy.

Too long now the home owners of the Gulf of Mexico Texas Coast have had to endure inadequate or improper heating in their homes. By this is meant heating which does not afford automatic control of humidity, temperature and a volume of fresh filtered

air circulated through their homes. Too long they have suffered from sweating walls, cold corners and hot ceilings. By the same token, the discomfort of our long humid summer season has resulted in vast sums of money being expended in an attempt on the part of our people to secure some measure of summertime comfort in their homes. Many have turned to attic ventilation by fans. These are an aid to comfort, but much too often, these expenditures only result in fractional satisfaction, for, inside the homes humidity, dust and heat still remain.

Central Systems Popular

During recent years many manufacturers of year around air conditioning have perfected systems of cooling and heating for homes which have now passed the public acceptance stage and are rapidly becoming musts in modern home construction. Unfortunately however, home builders too often do not provide for this recognized convenience for human comfort. Homes are built with little or no thought being given to modern year around comfort until the owner moves in and later decides on his need and desire for air conditioning. Then, to complete such improvements considerable needless extra expense must be borne by the owner to obtain the many benefits of modern air conditioning.

Whether it is planned to install year around air conditioning now or later in a new or remodeled home, advise the home builder or purchaser that there should

be provided a system of ducts and adequate insulation in the home for combination heating and cooling. Of course, the home should be constructed so that extra windows and exposures are eliminated and the money saved can be applied to the provision of space for the air conditioning equipment. The cost during the construction period for an air distribution system is negligible; but to remodel later and provide for a modern automatic central air conditioning system may prove so expensive as to delay for years the home owner's enjoying this modern means of greater human comfort. In general it can be assumed that when an air distribution system is designed for an adequate amount of air for cooling it will also be adequate for heating after an adjustment of dampers has changed

(Please turn to page 130)



The office and shop of the Booth Sheet Metal Works, Beaumont, Texas. Mr. Innis, the author of this article, manages the air conditioning department.

Condensation—How To Control It

Everett R. McLaughlin
Pennsylvania State College

This material is taken from an address delivered before one of the Housing and Heating Conferences conducted by the Pennsylvania State College, School of Mineral Industries. "Acceptance of Building Materials" by Tyler Rogers, published last month was delivered before the same meeting.

THE story of man's existence upon this earth is a narrative of a struggle for improved living conditions, all the way from the first struggle for the better caves to the more recent struggle for oil. There have been many improvements, but each generation has had its housing problems. The increased comfort and convenience have not been unmitigated gains, however. One of the more recent spectres to worry the home owner is *condensation*.

No problem in old houses

In this country old houses seldom experienced condensation. There were several reasons for this. During cold weather the heating systems employed usually provided considerable ventilation and outside dry air found ready access to the living space around doors and windows. The walls had no applied insulation and consequently the cold parts of the wall were warmer than if insulation had been used. As we shall see in a minute, sheathing temperature is a vital factor in producing condensation. The water supply was limited in a majority of cases. Water carrying or pumping imposed a voluntary plan of conservation. Habits concerning the use of water were much more restrained than they are today. The generation of water vapor was limited, and besides that, the houses were proportionately larger. The occupancy per sq ft of floor was lower. Today we find the owners of these same houses restricted to the first floor with the second and third floors converted to apartments for couples or families.

New houses boast features which are intended to be improvements or necessities in this day of leisure time and high fuel bills. Compactness is stressed to the extreme until we find families squeezing into little more than 750 sq ft. This reduces cleaning requirements and saves steps but it produces overcrowding. The use of gas burning equipment for cooking produces

a double source of water vapor, the water evolved by the cooking process and the products of combustion, in the case of unvented gas stoves. On top of all this, there may be deliberate humidification, whether it's needed or not. Frequently to cut costs only a portion of the basement is excavated, leaving areas which are appropriately called crawl spaces. The damp ground in these areas is a continuous source of water vapor which may migrate up through the floors, or who knows, if the firestops are omitted, it may be free to migrate up through the walls. The first or second season that the house is occupied may be very severe from moisture in the new plaster. Cold surfaces anywhere on the enclosure may accumulate condensation. Door panels, metal frames and glass areas are the usual offenders in this respect. Nearly all houses experience some condensation on single glazed windows at various times of the year. This particular type of difficulty is not restricted to the heating season. It may occur on water pipes or cool basement walls during the humid part of the summer. The use of new materials and new methods of using old materials contribute to producing a house which is much tighter than earlier houses. This reduced the ventilation and infiltration to a great extent and thus retards the removal of moisture by this means. The ready access of water in the home encourages its use with a consequent greater evaporation. The daily shower contributes considerable evaporation. Laundry done indoors evaporates its share, and more if drying is attempted indoors. The severity of condensation is a direct function of the wintertime outdoor temperature. More trouble is experienced with water or frost on the window glass or in the walls when the temperatures are consistently low. Where insulation is used in the walls, and in some walls where it is not used, condensation is experienced merely because of the omission of the vapor barrier. These factors all help to contribute to trouble with *condensation*.

Some time ago we wrote an article on this topic which the editors chose to label "Is Your House All Wet?" Soon after this article was published, we began

Mr. McLaughlin is an assistant professor of engineering research in the School of Engineering.

receiving cries for help from all over the country.

New Kensington, Pennsylvania—"We noticed frost . . . just under the eaves of the roof, and the following late summer we noticed a bleaching of the wall paper in the bedroom on the opposite side. This has become progressively worse. It seems that the dampness is not like water but a sticky substance almost similar to maple sugar, and now the plaster is crumbling into small particles just under the 2nd floor bedroom."

Raleigh, North Carolina—"The humidifier has never been connected. We have had trouble with the windows sweating. We therefore ordered double windows that the casement people recommended, but we are having trouble with their sweating between the windows. The attic windows sweat and then form over in a solid sheet of ice."

Miami, Florida—"My home is built of concrete block and stucco. My serious problem is dampness and blackening of walls, particularly in the bedroom facing northwest. I say serious since I have intentions of using the room as a nursery."

Live Oak, California (Up the Sacramento Valley)—"We completed our new home and moved in on November 15th. Now the walls and floors are so wet that my drapes are thick with moldy fuzz and my rugs are green with mold. Bedrooms are worse."

Pennsburg, Pennsylvania—"I recently bought one of those three-storied houses built into the side of a hill. Some of the walls and, of course, the floor of the lowest story are in intimate contact with the ground. In summer during humid weather—which in my locality is frequent—condensation occurs on these walls and floor. The amount of this condensation is so great that half inch deep puddles form. Since this lowest floor includes the kitchen, dining room, playroom and laundry, we find ourselves very much inconvenienced during the humid season."

Snow Shoe, Pennsylvania—This trouble in an industrial building was brought to our attention a few weeks ago. It is a new building, 70 by 185 ft, constructed of masonry and glass blocks with a bow string trussed roof. One inch acoustical board had been applied to the bow string in order to reduce the noise level around the machinery spinning nylon stockings. The air conditioning system was oil fired and automatically controlled to maintain 82 F and 50 per cent relative humidity. Operations were started late in the summer of 1947. When the office force moved in about Christmas time they were disturbed by a continual dripping sound overhead. The overhead space was examined early in January and was found to be dripping wet. One louver 2 ft square had been installed in each end of the building, 185 ft apart. These were totally inadequate for carrying out the water vapor which was permeating the acoustical board. The 2 in. wood planks which supported the built-up roof were covered with mold.

State College, Pennsylvania—In connection with a humidity survey being conducted this winter, we have received calls from numerous persons. "My windows are dripping water onto the plaster and the floor." "The door freezes shut." "I have trouble keeping paint on the northeast side of my house." "The attic is always wet during cold weather."

All of these people are in trouble and most of them are at a loss for a solution to the problem. In their search for an answer, they are frequently ill-advised. The nylon stocking people were ill-advised to cut large holes in the acoustical board "to permit warm air to reach the roof and dry up the water." It was tried with adverse results.

Newspaper Tells All

A Pennsylvania newspaper with a circulation of approximately 500,000 copies had the temerity to carry a column which apparently was to introduce a new angle on the smoke problem.

"If you shiver with cold even when the furnace is going, don't be too quick to blame the new smokeless fuels.

"It may not be the heater but the humidity that's at fault.

"Authorities say a room should be heated to 68 to 72 F in winter with a relative humidity of 40 to 50 per cent.

"When air is taken indoors and warmed to 72 F, the relative humidity is cut to about 18 per cent.

"This is dangerously low, and the warm dry air steals moisture where it can get it.

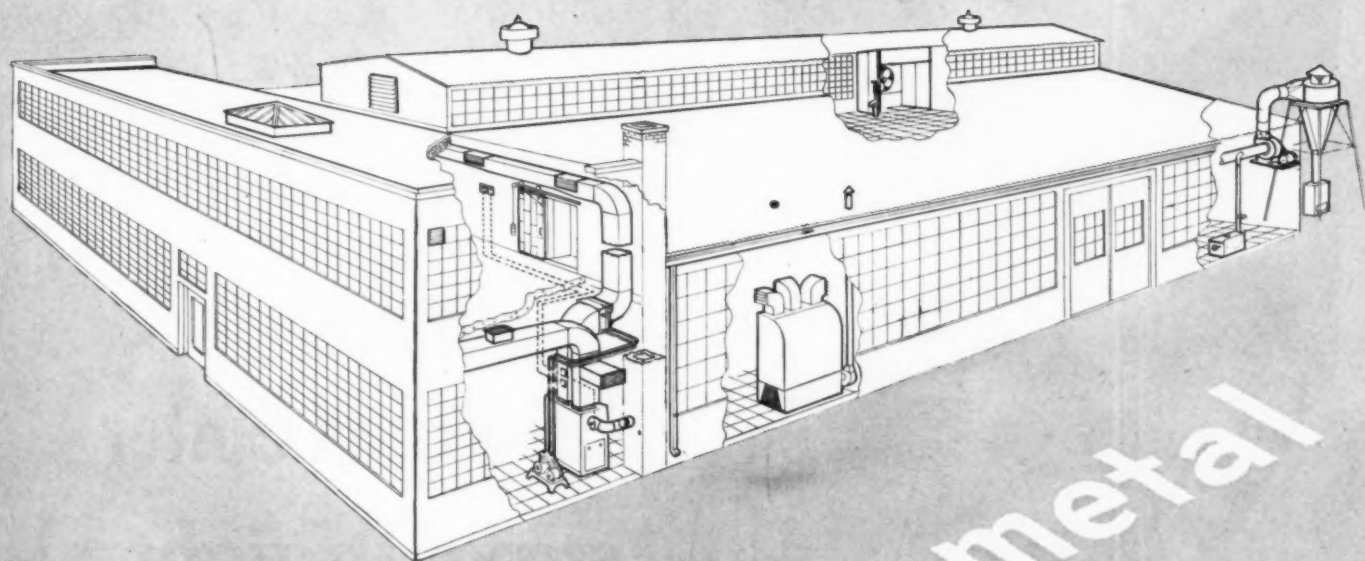
"Water evaporation cans on furnaces are wholly inadequate to meet the need for higher humidity. It is good to evaporate water in every heated room for the sake of comfort, health and a low fuel bill. The evaporation should amount to at least a gallon of water a day in every such room."

House Is a Container

The laws of nature cannot be disregarded with impunity. We cannot set up unnatural conditions without running afoul of some of the physical laws. All air contains moisture in the form of water vapor, actually low pressure steam, since the vapor pressure is usually a fraction of a point per square inch. A closed container full of moist air can be cooled only so far until a temperature is reached at which some of the moisture will be condensed. This temperature is called the dew point. The container may be a house. If the humidity is 30 per cent and the temperature is 70 F, the vapor pressure is 0.109 lb per sq in. and the dew point is 37 F. Every surface below 37 F will show signs of condensation. Single glass windows, for instance, will permit condensation when the weather temperature drops to 22 F at which time the inside surface of the glass will be approximately 37 F. If the exposed surfaces of the walls are above 37 F, and they are likely to be warmer, the water vapor, being a gas, may penetrate through the interior finish, such as plaster, and move on out through the wall until it strikes a surface cold enough to produce condensation. More vapor will move in to the space vacated by the condensed vapor and a serious condensation problem will have started. Serious because it is hidden from view.

In conventional walls using 2 by 4 studs, wood sheathing, and siding, the sheathing temperature will be approximately 36 F with temperatures of 70 F inside and 0 F outside. Slight condensation may appear if the indoor relative humidity is maintained at 30 per cent. One advantage of wood construction is that it

(Please turn to page 173)



sheet metal *Section*

DESIGN • FABRICATION • INSTALLATION
OF SHEET METAL PRODUCTS

no sag



Milcor Half-Round Gutter stays straight and true

Thanks to precision manufacturing methods, every length and every accessory is perfectly formed and easily fitted

Milcor has a complete line of gutters, conductor pipe, elbows, and accessories

You hang Milcor Half-Round Gutter jobs quickly and smoothly. Once up, they remain a credit to your shop.

Half-Round Gutter is built to give you and your customer complete satisfaction:

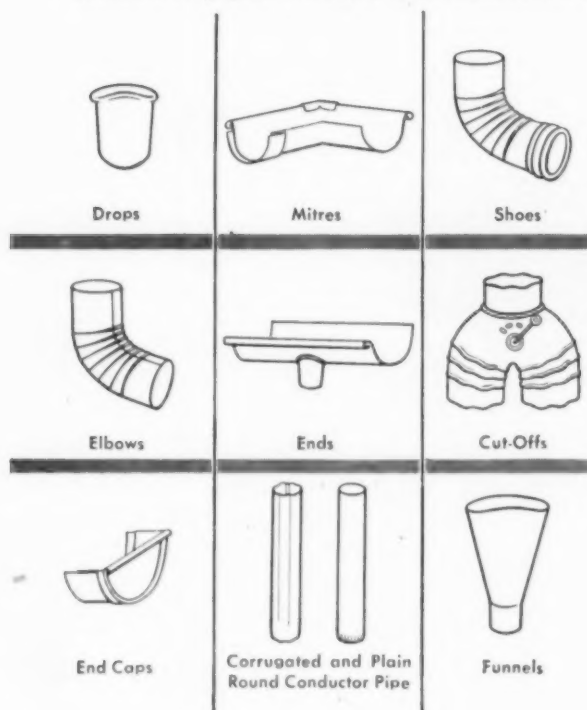
Hemmed Inner Edge adds toughness and rigidity. Together with carefully-rolled outside edge, this helps to make Half-Round easy and safe for you to handle. There are no sharp edges.

Perfectly-Rounded Shape is duplicated in all accessories, to assure jobs that are permanently tight-fitting.

Correctly-Formed Bead helps make gutter strong . . . helps to keep sections from sagging after the job is up.

Use Milcor Half-Round Gutter and accessories regularly. Available in either lap-joint or slip-joint style.

If you haven't already received your copy, write for Milcor Price Book on your business letterhead.



Inland Steel Products Company
Formerly Milcor Steel Company
MILWAUKEE 1, WISCONSIN

Baltimore 24, Md.
Buffalo 11, N. Y.
Chicago 9, Ill.
Cincinnati 25, Ohio
Cleveland 14, Ohio
Detroit 2, Mich.
Kansas City 8, Mo.
Los Angeles 23, Calif.
New York 22, N. Y.
Rochester 9, N. Y.
St. Louis 10, Mo.

G-144

Monel Metal Roofing Offers Strength, Durability, Long Life

There have been numerous applications of this metal, both inside and out. Monel has been winning growing acceptance as a quality roofing material. Some jobs of large scope are mentioned and illustrated in this article.

PERRY S. DEWEY
Chrystie Cornice & Skylight Works
New York, N. Y.

IT WAS 38 years ago that Chrystie installed its first Monel roofing atop the 32-story, waterfront Whitehall Building, New York, now famous as the Weather Bureau. Location, important in gathering weather data, is equally important to roofing and sheet metal contractors due to the unusually severe exposure conditions. Constant sea breezes, coupled with city soot and air-borne grime are all equally damaging to the sheet metal on this building. The fact that Chrystie's Monel work is intact and leakless has been a convincing selling point for this metal.

Earliest acceptance of this metal was an adventure. But now it is recognized that this material no longer is "on trial." Cautious prospects, however, still ask to see examples.

Examples Shown

So they are shown the many tons of Monel metal that were laid on the Brooklyn Museum of Arts and Sciences in 1936. Here they can see skylights, standing and flatseam roofing, penthouse siding, ventilators, several hundred feet of hanging gutter and equal lengths of lined gutter.

If prospects remain uncertain, they may be taken to many other Monel roofs. Examples might be the Pennsylvania Railroad Terminal whose engineers, after acquiring the first of a series of Monel roof and skylight applications in 1910, have specified the same metal many times as other materials formerly in use required replacement. Prospects can also visit New York's Bankers Trust Co. building, Monel-roofed in 1912, still strong and weather-resistant.

Property Owners Informed

Owners of large properties and their maintenance engineers are surprisingly metalwise these days. Often such owners are banks and insurance companies or other financial institutions, many of whom own and manage hundreds of buildings. These experts know

their business. They are interested in data and service records on metal jobs. But often they also like to keep informed on the physical qualities of the metal itself, knowing that these things have an influence on shop and erection costs.

So they ask if it goes through the machines easily. Can it be easily soldered and does the solder hold? How readily can Monel be sheared and nibbled? Such practical inquiries can be answered by saying that this



Fig. 1. Monel metal gutter lining is being applied to the Main Public Library in New York city. Gutter and roofing required 220,000 lb of metal.

metal forms, cuts and solders as well as other materials, though a few suggestions might be advantageous.

Monel's low coefficient of expansion, .0000078 in. per deg. temp. dif., is among the lowest of all the roofing sheet metals. This indicates that it does not creep, buckle nor warp easily in service. It does not mean, on the other hand, that expansion joints are not needed. Sometimes that is the case, but it's good practice to furnish them anyway as a precaution.

It Works Easily

The fact that Monel sheets are available in soft temper means it can be handled easily by brakes and other shop tools. Its springback, important in making up moulded gutter, is negligible. The mechanic does not have to set his brake for deep bending allowances. Contractors recognize that the low springback feature in connection with a metal sheeting of 78,000 psi is rare, for usually materials of high tensile strength acquire brittleness and considerable springback along with the extra high strength. But this is not true of the nickel-copper alloy known as Monel.

By this it should not be understood, however, that the high tensile strength of the metal will permit it to be nailed directly to the roof. The use of cleats is recommended. Monel screws, nails and bolts should be used wherever such fastenings are required.

Monel for Flashings

Flashing applications of this metal follow standard practice. One thing which may prevent tearing due to expansion is frequent insertion of 6 in. sections of crimped Monel in long runs. Solder such sections directly to adjoining sheets.

To form expansion joints, it is suggested that customary procedure be followed, namely, 1 in. gaps per 20 ft section. Gravel stops and aprons are made in the

usual way. Nor should roofing felt be omitted for perfect roof surfacing.

In soldering, best results are obtained by the use of heavy irons, those weighing 10 lb per pair. Have them hot, not merely warm. A 60/40 solder (60 per cent tin and 40 per cent lead) is superior to a half-and-half formula.

Use of Flux

A point that might be overlooked is in the use of soldering flux. Almost any approved, liquid acid-type flux serves well for soldering Monel. The strong chemical fluxes prepared for etching some hard-surfaced materials are not necessary. The point is that even if traces of flux remain when soldering Monel, damage will be slight if any. This is in contrast to some fluxes



Fig. 2. This skylight and stair-head were covered with Monel when the new roof was applied. Building is Brooklyn Museum of Arts and Sciences.



Fig. 3. Batten seam caps being put in place on the roof of the Astor Library, New York. This entire roof is Monel metal.



Fig 4. Monel cleats are used to fasten the Monel standing seam roofing in this photo.

Fig. 5. The Monel cap flashing shown here on a power plant was installed 35 years ago and is still in prime condition.

which can eat holes through sheet metal. Pretinning of sheet edges prior to soldering is good practice. Apply the tin 2 in. inward, then flow the solder uniformly for $1\frac{1}{2}$ in. after fluxing the surface.

Due to the unusually high tensile strength of Monel, 78,000 psi as indicated, many times .018 in., or 26 gauge can be used, instead of greater thicknesses because weaker metals have to compensate in mass for what they lack in tensile strength. But more often 25 gauge is used for most applications, with gutter hangars and holding bands at least 24 gauge. Sometimes these are made still heavier, up to 16 gauge where needed. Prior to application of roofing, dirt and debris should be removed from sheathing.

Sales Factors

What sales factors influence the purchase of metal roofing, drainage and other architectural applications? High tensile strength is certainly a leading factor. One reason why this is so, among other features and applying particularly to gutters, is that strong metal does not sag and pull out of shape under heavy loads. A comparison might be made here between Monel and another common roofing metal: Monel's 78,000 psi compares to 42,000 psi for a metal widely used.

Monel has become popular in the New York area for skylight capping and sash bars. Some skylights applied on the Brooklyn Museum are puttyless, others have the glass laid in putty. Thus far during 12 years of service no glass has broken due to metal failure or distortion. In this application the low expansion rate of Monel is important for, as roofers know, summer's heat and winter's cold sometimes loosen or crack the glass due to metal movement.

Roofing Techniques

In flatseam roofing with Monel standard sheet sizes of 16 by 18 in. are laid in courses parallel to the eaves. The shorter dimensions of sheets are placed at right angles to the course, with cross joints staggered. After



edge tinning, bend the edges to form $\frac{3}{4}$ in. locked and soldered seams. Corners should be notched. It is apparent that installation procedure with this metal follows rather closely that of other materials.

Further, all regular roofing styles such as standing, flat and batten seam, lend themselves to the use of Monel. This applies also to different types of flashings, of which there are no fewer than 10 classes in present use and to gutter, which includes at least six common types.

Joining With Other Metals

Yet another feature that has often influenced the purchase of Monel in preference to other roofing material is that it weathers a uniform slate brown, though as it ages it becomes lighter. Then, too, as this metal is harmonious with copper the two may be joined if required. This has been done at a few points on the Brooklyn Museum roof. Sealing the joint with mastic

as a precaution, no chemical reactions nor leaks have developed in service.

Owners of industrial buildings, taken as a class, usually purchase top-grade construction materials, considering this a sound investment that spells operating economy in the long run. When planning new plants that are to be longer than 350 ft., one or more expansion joints are included to compensate for the normal movement of structure. One of the reasons Monel is specified is that should premature failure of the ex-

pansion joint occur the difficulty of repair or replacement would be great. It is plain that the finest materials are the best investment.

Industrial applications of sheet metal roofing, skylight covering, flashing and drainage, are recognized as more severe than residential and other architectural uses. For, added to normal weather hazards, is the likelihood of acid fumes, hot cinders, vibration and other damaging factors. So, only durable materials can be expected to withstand severe conditions.

OPEN FOR DISCUSSION

Scientific Shop Layout

• In the December, 1948 issue of *AMERICAN ARTISAN* a letter appeared in "Open for Discussion" questioning some points brought out in the series with the above title that is being written by Ernest Zideck. Mr. Zideck's reply appears below and he also made the following comments in an accompanying letter:

"My answer makes it clear that I do not present in this series *ideal* shops. Each shop shown and discussed was personally visited by me during the war, in my capacity as Coordinator of Processes, Tools and Production, first for the Navy; and then on Martin Wings (Rockford, Ill.); the Modification of B-29's, at Marietta, Ga.; and Cargo Ships at New Orleans.

"My work carried me to hundreds of shops in which parts and smaller items were produced for aircraft, marine, automotive, electronic and related production. These shops were known as sub-contractors for the prime contractors, both under Navy or Army engineering. Talking with the shop owners while transforming their shops for war work, I also paid attention to what they wanted to do after the war, conditioning their shops accordingly. In my traveling in the post-war period I visited many of the shops—and am still so doing—to find out how they operate in the shops which I helped to organize."

Mr. Zideck Replies

Answering your correspondent in "Open for Discussion" of *AMERICAN ARTISAN* of December 1948, the shop layout criticized by him is one of nearly fifty which, during the war, were transformed to making parts and assemblies for aircraft, marine, automotive and electronics units for the armed forces. The shops treated in the drawings and text are shown partly as set up for war production, and partly reconverted to their respective civilian work, largely retaining the interior arrangement of facilities and production tools in sequence of operations, stressed in this series.

Eighty per cent of the shops shown and to be shown in subsequent issues of *AMERICAN ARTISAN* were located in old buildings. Engineers acting for either the Army or the Navy had to plan for quick and accurately specified production in them. Very few alterations or new additions to the buildings were possible under the circumstances. At that, the shops as transformed for war production and as reconverted for civilian production, were vastly superior to their original condition, and the condition of most sheet metal shops as we find them, traveling the country.

Using the Articles

This Shop Layout series is intended to acquaint sheet metal men with what has been done in the way of systematizing production. By studying the articles, looking at the drawings and identifying their details, the sheet metal man planning improvements for his shop or deliberating on building a new shop will be benefited in his planning. Many shops, many products are shown and discussed in the series. There probably will be one among the number, fitting the building in which the reader's present shop is located. The man thinking about erecting a new building for his shop may arrive at a decision as to which of the many layouts shown would best fit into his plans for his particular work or product.

The Ideal Shop

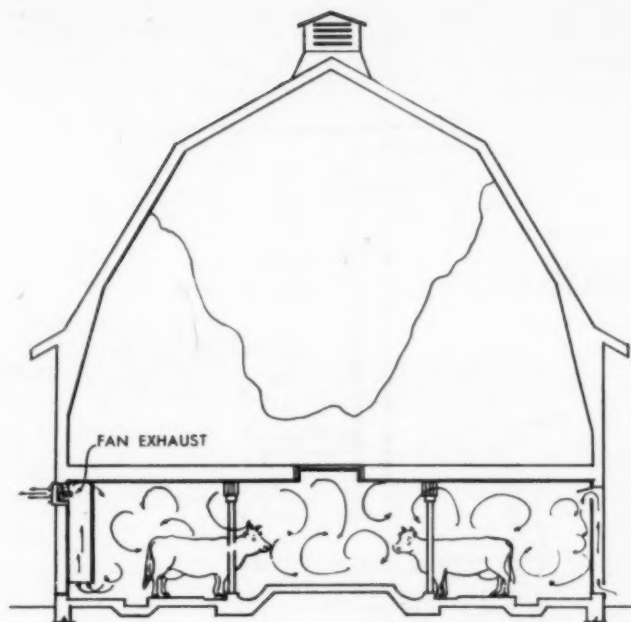
An *ideal* shop is attainable if we study a variety of other shops and can decide which of many features we wish to incorporate. The ideal shop is seldom possible in an old building; but nevertheless, much can be done even in an old building to modernize production. In this series of Shop Layouts most of the descriptions are of shop modernizations in old buildings. Only in aircraft, automotive and marine sheet metal work was it possible to approach the ideal by placing the shop in a building erected for the purpose.

ERNEST E. ZIDECK

Correct Practice In Farm Ventilation (V)

L. E. PETERSON

ILG Electric Ventilating Co.



Dairy Barn Ventilation

TO THE dairyman one of the most difficult problems that he has to face is barn ventilation. The importance of proper ventilation of the barn can hardly be overemphasized in view of the increased milk production that is possible under the right conditions, and the improvement that can be made in the health of the animals. In point of fact, it is possible to produce better quality milk in well-ventilated barns that are free of barn odors. Studies at the Agricultural Experiment Station at the University of Wisconsin have indicated that production can be increased 3.5 per cent through good ventilation. On the other hand, the barn that suffers from poor ventilation may soon need repairs to rotting timbers and framework.

Why Ventilation Is Needed

Any preliminary study will show that there are three primary reasons for the use of a ventilating system in a dairy barn: 1) To control the stable temperature, 2) To keep the stable dry and 3) To supply the cows with fresh air. It is very important that the stable be well insulated and doors and windows be tight in any attempt to control the temperature in the structure. Poorly insulated and ventilated dairy

Some of the most progressive farmers in this country are operating dairy farms and they are always alert to ways to boost quality and production. Proper ventilation of the stable is essential and this discussion shows why that is so. Included is material from *Dairy Cattle Housing in the North Central States**

barns are drafty and the heat generated by the cows is quickly lost on cold winter days.

A cow gives off an average of $2\frac{1}{2}$ gal of moisture in 24 hours. This moisture tends to condense on the cold walls and ceilings and make them damp, causing rapid rotting of the timbers. Contrasted with the increase in production that can be effected by proper ventilation, it is estimated that improper conditions can cause a 5 to 10 per cent decrease in milk production.

Sizing System

The sizing of the ventilating system depends, of course, on the livestock population of the barn. A generally accepted rule of thumb is a fan capacity of 35 to 100 cfm per cow or 1000 lb of other livestock. A barn ventilation system with an actual exhaust rate of 35 cfm per cow, supplemented with windows for ventilation in mild weather, will keep barns dry in winter weather.

The aim of the system is the establishment of proper conditions for the dairy animals and fan capacity and temperature control must be planned to achieve this end. Studies have shown that dairy cows in a stall barn produced as well and were as healthy at 45 to 50 F as at higher temperatures. Loss of production at lower temperatures has not been accurately determined, but where water bowls are used the temperature must be held above 32 F to avoid freezing. For

* Published by the Dairy Cattle Housing Subcommittee of the North Central Regional Farm Buildings Committee representing the State Agricultural Experiment Stations.

In Barns with
Masonry Walls

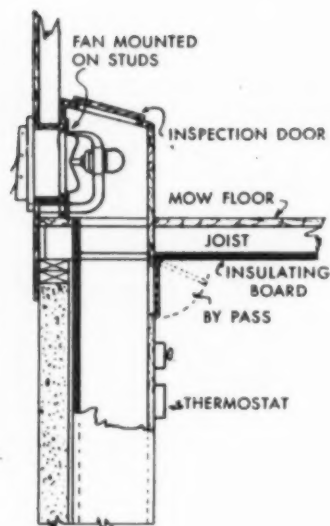


Fig. 1

In Barns with
Wood Walls

Side Elevation

Plan

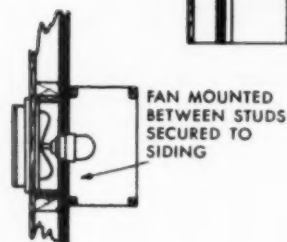


Fig. 2

the cow housed in the cold loose housing system where a small insulated tank is used for watering, low temperature has been found to have little effect on production.

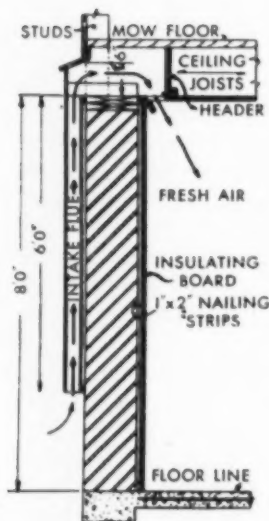
The way in which temperature control of the dairy barn operates is as follows: when the animal heat warms up the barn the thermostat turns on the fan; when the stable cools off the thermostat stops the fan. Control equipment requirements are simple since any good thermostat can be used, provided it is arranged to open the circuit as the temperature drops to 38 or

40 F and close the circuit starting up the fan as the stable temperature reaches 48 F.

Planning the Installation

Installation of the ventilating fan is generally as shown in Fig. 1 and 2. During the winter the air is drawn from the floor where the temperature is lowest. Then in summer the door at the top is opened permitting the fan to draw the hot air off the ceiling and thus cool the barn quickly. Intake openings such as those shown in the sketches (Fig. 3-6) allow the in-

Fig. 3



Intake Built on
Outside Wall

Fig. 4

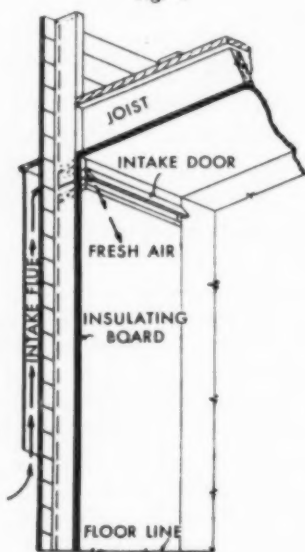
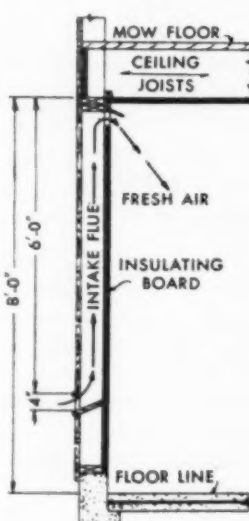
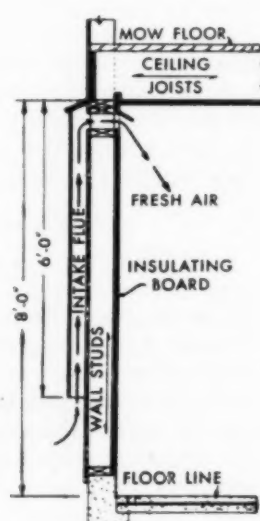


Fig. 5



Intake Built
Between Studs

Fig. 6



Intake Built on
Outside Wall

production of fresh air without drafts, in barns that are tightly insulated. In barns of ordinary construction there is usually enough leakage so that the intakes are not necessary. Best ventilating results will be obtained in a barn that is well insulated and has properly located and installed intakes.

When intakes are required they are simple box flues built into the stable wall constructed with 2 by 4 in. by 6 ft studs placed to match width of stable studs or ceiling joists and covered with sheet metal or hard insulation board. The size of the intake opening at the ceiling should be $4\frac{1}{2}$ by 14 in. when stud or joist spacing is 16 in. on centers and 3 by 22 in. when spacing is 24 in. on centers. A door hinged in the ceiling permits regulation of the fresh air intake.

Location of Fans and Ducts

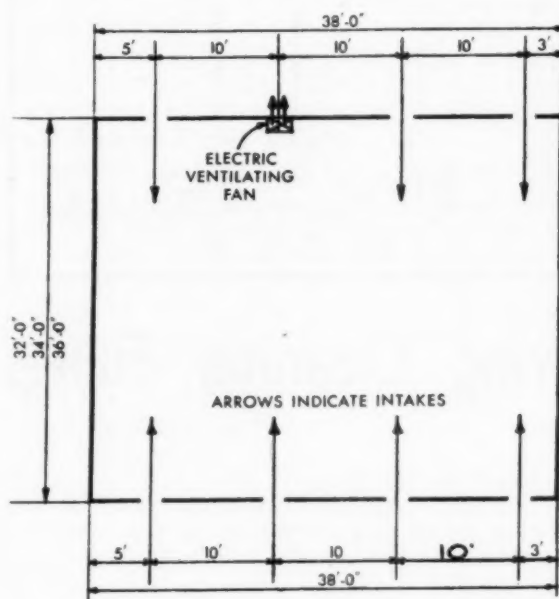


Fig. 7

Spacing the Fans

If the barn is well constructed and insulated to prevent air leakage, intakes will, of course, be required to permit entrance of outside air. The intake ducts and fans should be located 10 ft apart on the outside walls (not the ends). In a system using one fan it should be installed as shown in Fig. 7. In this type of installation the thermostat should be set to shut the fan off at 38 F and turn it on at 48 F.

When the size of the barn requires two fans they can best be installed as indicated in Fig. 8, at opposite ends on the same side of the barn. One thermostat should be set to stop fan at 42 F and start it at 50 F and the other thermostat, 38 F and 48 F respectively.

Three fans will be installed as Fig. 9 and the thermostats should be set as follows: Thermostat of one fan set to shut off at 44 F and on at 52 F; thermostat of second fan to shut off at 40 F and on at 50 F; thermostat of third fan to shut off at 38 F and on at 48 F.

In a discussion of ventilation of dairy barns it is almost as important to take up the subject of insulation as ventilation since the two go hand in hand in producing desirable housing conditions for the dairy herd. In order to preserve sufficient heat produced by the animals in the barn to warm the cold air brought in for ventilation purposes, the walls, windows, doors and ceilings of barns must prevent too rapid loss of heat. The point to remember in this regard is that well ventilated barns have fewer moisture problems

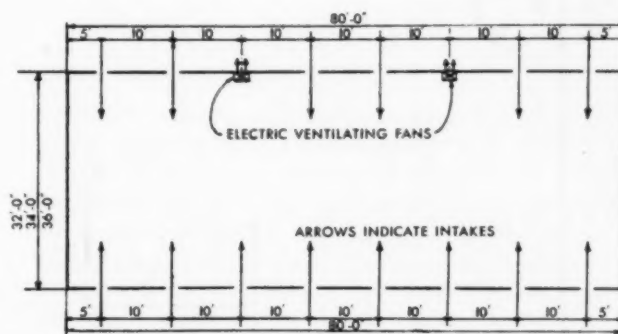


Fig. 8

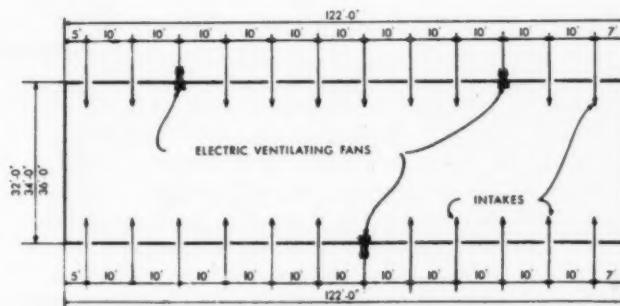


Fig. 9

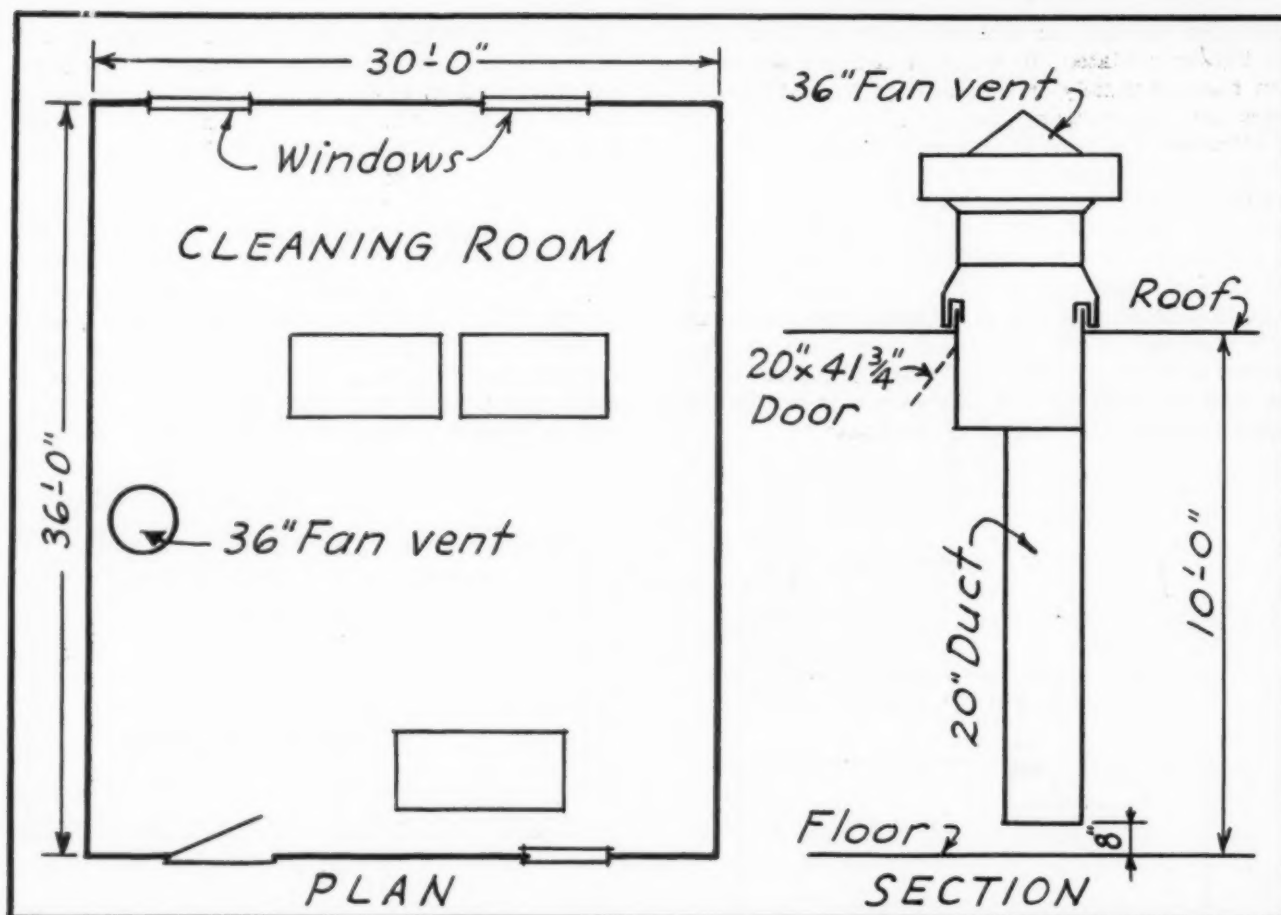
and when insulated the walls, ceiling and floor have little or no condensation of moisture.

Preventing Moisture Damage

One vital phase of insulating the barn is the prevention of damage from condensation. Vapor proofing the inner wall and ceiling surface of warm dairy barns in such a way as to eliminate difficulty from condensation or moisture damage in walls and in the hay loft is essential to the protection of the building itself.

Moisture in walls reduces the effectiveness of insulation and rots wood. Moisture in masonry that is not especially designed for use under high moisture and

(Please turn to page 144)



Ventilation Problem — Removing Cleaning Fumes

PAUL R. JORDAN
Indianapolis, Ind.

WE ENCOUNTERED a ventilation problem in a room 30 by 36 by 10 ft containing equipment which was both heat and fume-producing (from cleaning fluid). Therefore, a double problem existed, namely heat removal in summer and ventilation, with heat conservation, in winter. This, however, could be handled with one system with a properly-operated damper door. The system could be located near the wall, or toward the center of the room where the concentration of fumes was greatest. Thus, the location depended on where the duct would cause the least interference. For summer heat removal it would not make much difference whether the hot air was pulled from the wall side or from the room center, as long as it was taken from the extreme top, toward which the hot air naturally rises. In winter the fumes, which are heavier than air, spread on the floor, and would be taken to the duct opening at the floor by the air travel furnished by the exhaust.

The Solution and Installation

We mounted a 36 in. direct connected fan ventilator on the roof which handles 1.4 air changes every minute; approximately the right frequency.

This 36 in. ventilator and base 46 by 46 in. were in-

stalled over a curb 45 by 45 in. outside dimensions. If regular dressed 2 by 6 in. or 2 by 8 in. lumber is used for this type of curb, the inside dimensions will be 41¾ by 41¾ in. A box of similar dimensions was extended down from the inside of the curb, 20 in. below the ceiling. Inasmuch as the box area was considerably greater than the fan size, the roofing joists did not have to be cut out. This box was equipped with a tight door making up one entire side, or 20 by 41¾ in. From the lower side of this box a 20 in. duct was dropped to within 8 in. of the floor. This duct can be round or square, (or it can be rectangular provided the area is sufficient). A manually-operated damper was installed in this duct about 6½ ft. above the floor.

Operation

In summer the door in the box at the ceiling is kept wide open day and night. In hot weather the fan runs through the night to cool off the building. In mild weather, gravity action is sufficient to cool the building off overnight, provided there is no heat production at night.

In winter the door is closed tight, and kept closed

(Please turn to page 146)

Layout of Sheet Metal Shop Aids Production

R. C. NASON
Great Neck, New York

As anyone versed in production techniques knows, the vital factors are the way in which raw material enters the shop, how it is processed within the shop and the efficiency with which it is shipped out. Here is a shop that has been set up with all these factors in mind.

EFFICIENT shop arrangement and convenient plant location were the basic principles on which the Crown Sheet Metal & Roofing Co. was established in New London, Connecticut. Both these factors contribute to the versatility of this shop which handles sheet metal and roofing work ranging in size from small houses to large public buildings.

The owner of the Crown Co., Louis G. Sala, bought the three story building in which his company is housed in 1940. One of the most attractive features of the building, to the purchaser, was the railroad siding which was at the level of the second floor. This made the location of the sheet metal shop on the second floor seem most logical. Another feature is the fact that the same shipping platform which serves the siding has a truck ramp to handle shipments and deliveries by that medium.

Floor Arrangement

As indicated, the sheet metal shop is on the second floor, the first is occupied by the roofing division of the company and the third floor is given over to storage space. It is the second floor that we are most concerned with and a layout of this floor is shown in Fig. 1.

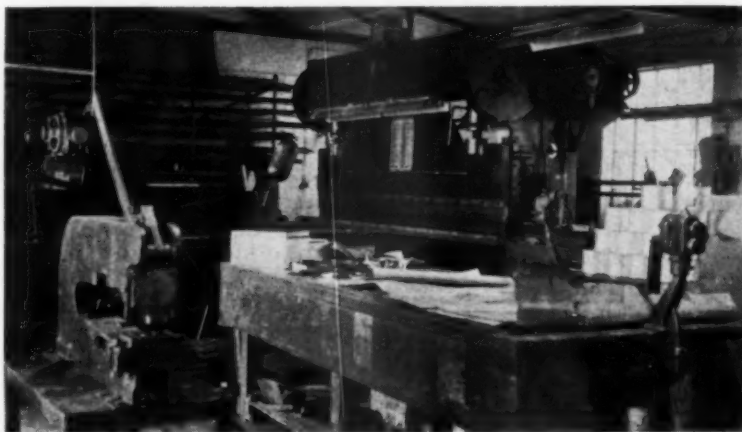
The second floor of the building is divided into the

main office, drafting room and two shops, numbered 1 and 2. Shop No. 1 is approximately 35 ft wide and 60 ft long. It is devoted to light gauge fabrication and so air conditioning, warm air heating, and ventilating ducts are produced in this shop. Tools located in this shop include a Pittsburgh lock forming machine, 4 and 6 ft hand brakes, shears and bench tools such as edgers, flangers and circle cutters.

Heavy Gauge Products

Fabrication of heavier gauge products takes place in shop No. 2, where the shipping and receiving department is located. A 10 ft shear and a 10 ft press brake are located near the door and sheet rack, so that there will be a minimum of handling if the stock is to be sheared prior to storage.

When there is any welding required in any part of either shop it is easy to transport one of the portable arc and oxy-acetylene welders which are located at the partition between the two shops. Since there are two welders of each type there is seldom any production delay for lack of welding equipment. Handling of material that is in the process of production is aided by the use of hand trucks which transfer work between



This is a view of the upper left hand corner of Fig. 1 (Page 98) showing the press brake and the motor of the shear, at the left.



Shop No. 1 is located behind the partition at the rear of this view. Mr. Sala, owner, is shown standing behind the brake.

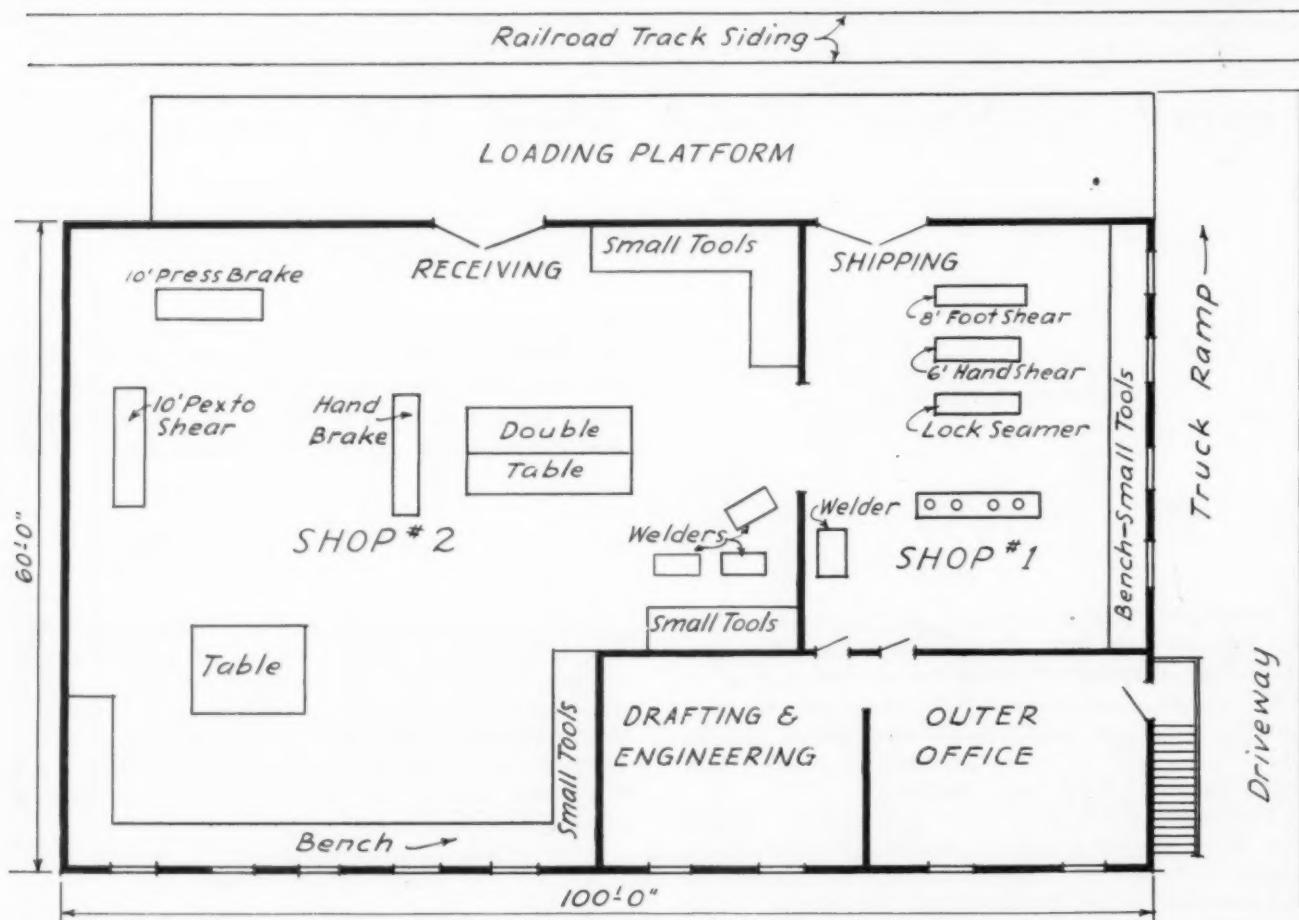


Fig. 1 Floor Plan of Shop.

the large tables and benches.

Correct lighting is important in a sheet metal shop and it has been given careful consideration in this particular plant. The large shear and press brake are served by fluorescent tubes and the same type of lighting is used over the major 50 ft work bench. This particular bench is along a wall that has many windows, eliminating need for artificial light during many days of the year. Since the company advertises 24 hour service, however, the lighting equipment does get plenty of use during evening hours.

An analysis of the work handled by this company shows a wide range of jobs for governmental establishments (both local and federal), schools, firehouses, hotels and other large institutions. In the field of roofing and sheet metal the firm has put copper roofs on residences as well as schoolhouses and turns out a considerable volume of ornamental, architectural sheet metal products for large public buildings. Crown Co. also applies slate, built-up and other types of roofs wherever specified.

Warm Air Heating Spreads

The state of Connecticut, along with its neighboring states, has the reputation of being an excellent market for wet heat and a poor one for winter air conditioning. But in recent years the natives seem more inclined to

take the "Seven Steps to Indoor Comfort," according to Louis Sala, owner of Crown Co. This has been true of residences and schoolhouses and larger public buildings, as well.

New London is a noted ship repair and refueling station and across the bay is Groton where the famous Electric Boat Co. is located, builder of many of the Navy's submarines. With the amount of ship building and repair that takes place in this area there is a constant need for sheet metal products and Crown is geared to turn out almost anything needed on short notice.

Value of Advertising

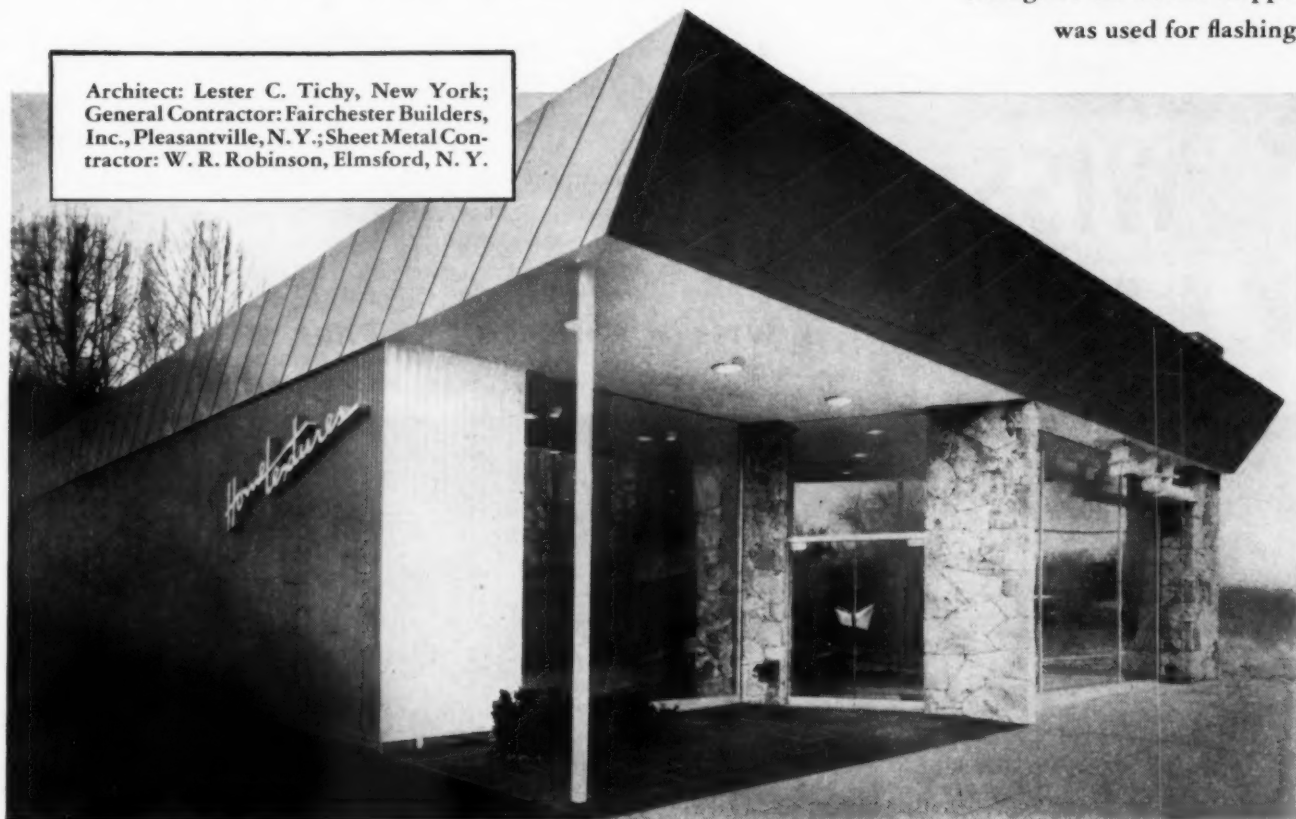
While much of the work that passes through the Crown shop is Navy or governmental work that is not necessarily secured by advertising, still the firm is a strong believer in the power of the printed word. Considerable direct mail advertising is done and any business directory that is published carries Crown advertisements. In the telephone directories one quarter page is taken to promote the roofing division and another emphasizes general sheet metal work and warm air heating. The owner of the company feels that there are no dollars spent in the operation of his business that are better spent than those given to advertising.

COPPER

makes COMMON SENSE

for "MODERN"!

Architect: Lester C. Tichy, New York;
General Contractor: Fairchester Builders,
Inc., Pleasantville, N. Y.; Sheet Metal Con-
tractor: W. R. Robinson, Elmsford, N. Y.



Colorful and lasting beauty is provided by the sheet copper facing around the new Home Textures store in White Plains, New York. In addition, both original cost and maintenance of the copper facing are extremely low.

This new building is another striking proof of the versatility of Revere Sheet Copper—the metal that is equally suitable for modern or traditional architecture . . . for big jobs or small jobs . . . indoors or outdoors. In fact, it makes sense to rely on copper *whenever you want beautiful and lasting sheet metal construction.*

And for the answers to your problems on design or installation of sheet copper, it will pay you to use the new technical data developed by the Revere Research Laboratories. You'll find these data in Revere's booklet, "Copper and Common Sense." This authoritative

Note the facing of Revere 20 oz. cold rolled copper, in sheets approximately 2'x4', which goes around 3 sides of this modern store building. The copper will be allowed to age naturally, and at all stages (particularly after the patina develops) will harmonize with the chocolate brown siding. 16 oz. Revere Copper was used for flashing.

manual of sheet copper construction has been widely distributed to architects and sheet metal contractors, and there is probably a copy in your files. Be sure to refer to it as your guide to fine and durable sheet copper construction.

Revere materials are available from leading distributors throughout the United States. A Revere Technical Advisor will always be glad to consult with you without obligation.

REVERE
COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y. — Sales Offices in Principal Cities, Distributors Everywhere.

**BETTER,
FASTER
SHEET METAL
WORK**

with

WISS

METAL-MASTER SNIPS

Examples of intricate designs which can be cut with Metal-Master Snips.

Metal workers say these *compound leverage* snips cut heavy sheet metal with amazing ease and in any design. Wiss Metal-Masters are far superior on several counts:

1. Their improved design and skillful construction makes cutting action smooth and uniform from the back of the jaws to the point.
2. Their small size permits the metal worker to carry them in his pocket and keep them on the job at all times.
3. Metal-Masters are the answer in cutting inside holes and for the most intricate patterns and curves, as well as for standard cutting jobs.

Quality for over a Century

J. WISS & SONS CO., NEWARK 7, NEW JERSEY





California

The Institute of Gas Heating Industries, Inc., Los Angeles, has announced a 12-week course in Gas Heating Engineering to be given without charge to a limited number of key employees of member companies. The course will be given in lecture form by instructors furnished by the Southern California Gas Company, under the guidance of the Special Educational Committee of the institute. Opening date for the course will be Monday, February 28, 1949.

The course promises to be thorough and comprehensive, covering in detail such subjects as Production, Transmission and Distribution of Natural Gases; Natural Gas as a Fuel; Terminology; Methods of Heat Transfer; Types of Heating and Cooling Equipment; Measuring Heat Losses; Insulation; Human Comfort; Humidifiers; Location of Equipment; Location of Registers; Layout and Design; Controls; Gas Vents; Gas Pipes; Air Cleaning Devices; Panel Heating; and Codes. The session will close with review classes, featuring questions, discussion, and a final examination.



Paul E. Martens, a recent graduate of the course for journeymen heating installers sponsored by the Institute of Gas Heating Industries, receives his certificate and congratulations from Richard O. Montrieff (right), president of the institute

Classes will be held Monday evenings between the hours of 7:30 and 9:30 in the main auditorium of the Southern California Gas Company, 820 South Flower St., Los Angeles.

In addition to this course, the proposed educational program of the institute for 1949 also includes courses on Business Administration and Sales Training.

COMING EVENTS

Feb. 20-24—National Association of Home Builders in Chicago, Fifth Annual Convention and Exposition. Stevens Hotel, Chicago, Ill. Convention Headquarters, National Association of Home Builders, 111 W. Jackson Blvd., Chicago 4, Ill.

Mar. 7-9—Ohio Sheet Metal Contractors' Association, Annual Convention. Biltmore Hotel, Dayton, Ohio. E. D. Busch, chairman convention committee, 1736 E. Third St., Dayton.

Mar. 9-11—Michigan Sheet Metal, Roofing, Heating, and Air Conditioning Contractors' Assn., Inc., Annual Convention. Pantlind Hotel, Grand Rapids, Michigan. N. J. Biddle, Secretary, 3035 E. Grand Blvd., Detroit 2, Mich.

Mar. 21-23—8th Heating and Air Conditioning Conference, sponsored by the Iowa State College in conjunction with the Iowa Chapter of the American Society of Heating and Ventilating Engineers, and the Sheet Metal Contractors' Association of Iowa. Iowa State College campus, Ames, Iowa. Marvin Gould, conference secretary, Iowa State College, Ames.

Apr. 4-5—Sheet Metal Contractors' Association of Illinois, 35th Annual Convention. Jefferson Hotel, Peoria, Ill. W. R. Shaw, secretary, 695 E. State St., Jacksonville, Ill.

Apr. 4-6—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc. Convention and Product Display. Mark Twain Hotel, Elmira. Clarence J. Meyer, Secretary, 567 Genesee St., Buffalo 4.

Apr. 29-30—New Jersey Society of Professional Engineers, 25th Annual Convention. Essex House, Newark, N. J. James M. Nerl, chairman of committee on exhibits, 86 E. State St., Trenton 8, N. J.

May 9-11—Sheet Metal Contractors' National Assn., Inc., Annual Convention. Wardman Park Hotel, Washington, D. C. Joseph D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

May 9-11—Liquefied Petroleum Gas Assn. Annual Convention and Trade Show. Palmer House, Chicago, Ill. Howard D. White, Exec. Vice President, 11 S. LaSalle St., Chicago 3, Ill.

May 16-20—Oil-Heat Institute, Inc., National Oil Heat Exposition. Mechanics Hall, Boston, Mass. A. E. Hess, managing director, 6 E. 39th St., New York 16, N. Y.



Richard Felhaber, St. Paul

Labor Relations Jurisdiction Major Topics at Minnesota Convention



Walker Jamar, Duluth

IN THE midst of a brief spell of spring-like weather the Sheet Metal and Roofing Contractors Association of Minnesota met in St. Paul for its second annual convention. The Hotel Lowry was the scene of this well-attended meeting on January 7th and 8th.

President Lester B. Hill, of Austin, welcomed the delegates to the convention and emphasized how important it is to the industry to have active associations in which dealers and contractors can cooperate to take collective action for the good of all. He then turned the meeting over to Richard E. Walsh, St. Paul, president of the Sheet Metal Contractors' National Association. The main message that Mr. Walsh had to convey to the group was in regard to a request received by the national association from the National Security Resources Board for recommendations about regulation of the industry in case of war. The NSRB asked for a report on the effectiveness of the controls that were imposed on the industry during the last war and outlines of the type of controls that would get the best results in the next. J. D. Wilder, executive secretary of SMCNA, has been compiling the necessary information and it is being submitted to the board of directors for approval before it is sent to Washington.

After the group luncheon a local Reynolds jobber, Newell T. Miner, presented a color motion picture on the subject of using aluminum for built-up roofing.

Friday afternoon the meeting opened with the reading of the minutes for the year by C. E. Parriot, secretary, and also the reading of the applications of a number of new members who were accepted into the

association. Richard Felhaber, St. Paul, attorney for the SMCNA, was the next speaker on the program and his topic was labor legislation.

Mr. Felhaber said that the main points of argument in labor relations seemed to be the closed shop and jurisdictional disputes. He indicated his belief that the closed shop will be legalized by the new Congress but thought that the unions have been well-satisfied with the workings of the National Joint Board for the settlement of jurisdictional disputes and would be inclined to wish to continue it.

Labor Costs to Increase

He warned the contractors to expect an increase in their labor costs through increased social security rates and boosts in the unemployment compensation charges. His opinion was that socialized medicine will not be passed this year. As an example of the impact of fringe benefits on the labor cost per hour Mr. Felhaber said that a public utility in the northwest region has calculated that the fringe benefits contained in its contract add up to 52c per hour per man.

In concluding his talk, the speaker said that he felt that the fourth round of wage increases would be ineffective because of wage chiseling by workers who will be out of work and willing to cut their rate to get work.

Industry Must Cooperate

J. D. Wilder, Elgin, Illinois, was next on the program and he referred again to the request from the NSRB and then brought out the fact that the State of the Union speech of President Truman asked for several things which tie directly in with the board's request. Mr. Truman asked for priorities and allocations on materials in short supply, stand-by authority for price and wage controls and authority to make direct government loans to steel companies for expansion or to build the production facilities if the private companies were unwilling to do so.

One point that Mr. Wilder brought out in this regard was the fact that if there is any return to priorities and allocations it is the well-organized and vocal industry that will secure what it needs in the emergency. He advocated that the sheet metal industry strengthen its organization all the way up the line; city, state and national associations will succeed only insofar as their members are willing to devote time and energy to the furtherance of the industry.

The effort of the national association to secure more



Shown at the convention are Richard E. Walsh, St. Paul, president, SMCNA, Magnus Temne and E. D. Corwin, St. Paul architects, and John Walsh, also of St. Paul.

sheet steel for the industry was ineffective partly due to the SMCNA's lack of experience and power as a pressure group, according to Mr. Wilder. Other points he covered in his talk were: the bookkeeping committee is making a survey on methods of figuring overhead; the warm air heating committee is preparing a report on products liability insurance; the trade relations committee is going to make a concerted move to get architects and consulting engineers to set up separate specifications for sheet metal work; certain parts of Standard Practice in Sheet Metal Work are to be reprinted if permission can be obtained.

Walker Jamar, Duluth, spoke on the subject, "Bidding the Whole Job" and brought out the importance of performing all the work awarded to the industry

1949 Officers

Lester Peterson, Duluth.....	President
D. P. Johnson, Willmar.....	1st Vice President
T. F. Burniece, Jr., Minneapolis.....	2nd Vice President
E. E. Woodhouse, Rochester.....	3rd Vice President
H. T. Helle, St. Paul.....	4th Vice President
Chris Peterson, Minneapolis.....	5th Vice President
C. E. Parriot, St. Paul.....	Secretary
L. O. Aanerud.....	Treasurer
Ray Kraus, Minneapolis.....	Sgt-at-Arms
Walker Jamar, Duluth.....	Director
Harold Ofenloch, Winona.....	Director
Harry Quade, Jr.....	Director
L. B. Hill, Austin.....	Director



Fireline Dan concentrates



Gentlemen! Be Seated

in decisions of the jurisdictional board. If these awards are not claimed by the industry they can be lost permanently. Two particular examples given by Mr. Jamar were the steel decking award and the erection of metal store fronts. Both of these types of work are profitable and a contractor can build up a good volume through doing such jobs.

The part played by the architect and consulting engineer was again brought out by Mr. Jamar and he stated his opinion that the best approach to recognition by the architects is through the American Institute of Architects. If the AIA can be convinced of the stature of the sheet metal industry, its member architects will not be difficult to deal with. A careful study of the awards in the field of ventilating and air conditioning was recommended by the speaker. His last point was to bring out the need for a standard form of bid or quotation which states exactly what is included for the price quoted.

Final speaker of the afternoon was Walter R. Jefferson, St. Paul, from the office of the Collector of Internal Revenue. Mr. Jefferson opened his talk by pleasantly wishing all those in attendance a prosperous year and a collective groan arose in reply. Very

succinctly and in an interesting manner, the speaker traced the history of taxes on personal income and when he had brought the story up to date, went on to explain some of the money-saving provisions of the Revenue Act of 1948. From the point of view of the small businessman one of the most vital aspects of the 1948 act is the community property provision and Mr. Jefferson explained this feature rather clearly. At the conclusion of his formal talk the speaker asked for questions from the floor and there were several points explained for delegates.

Friday evening was marked by the banquet which was certainly distinguished by the fine quality of the food served. A story-telling session followed the meal and Kenny Cronstrom of Minneapolis told his story about the "Duloot" bridgetender which brought down the house. There was also some musical entertainment with golden-voiced Dan Quinnan holding forth, as usual.

Saturday morning was devoted to reports of the committees of the association and general discussions of the various topics were held in conjunction with the reports. The report of the Apprenticeship Committee

(Please turn to page 126)

INDOOR COMFORT CONFERENCES

Evansville, Ind.—Feb. 21-23. F. P. Bean, Evansville 2.
Peoria, Ill.—Feb. 28, Mar. 1-2. E. A. Eichenberger, 308 S. Commercial St., Peoria 2.
Duluth, Minn.—Mar. 10-12. J. P. Nelson, 309 S. Fifth Ave., Duluth 1.
Omaha, Nebr.—Mar. 15-17. Lee C. Norton, 1201 Dodge St., Omaha 8.
St. Louis, Mo.—Mar. 21-23. C. S. Franke, 2719 Delmar Blvd., St. Louis 3.
Binghamton, N. Y.—Apr. 7-9. C. H. Starr, 168 Water St., Binghamton.
Cleveland, Ohio—Apr. 14-16. Don A. Fisher, 13444 Euclid Ave., Cleveland 12.
Columbus, Ohio—Apr. 18-20. Newton T. Hess, 63 E. Goodale St., Columbus 8.

CANADA

Toronto, Ont.—Feb. 21-24. Chapter offices, Yonge at Deloraine, Toronto 12.
Chatham, Ont.—Mar. 7-10.*
Brantford, Ont.—March 21-24.*
Montreal, P. Q. (English)—Apr. 4-7.*
Ottawa, Ont.—Apr. 18-21. A. L. Acton, c/o Beach Foundry, Ottawa.
Maritimes—May 2-6.*
Quebec City (French)—May 9-13. J. P. Thibault, La Fonderie de L'Islet Limitee

* Committee chairman not announced

Illinois

The 35th Annual Convention of the Sheet Metal Contractors' Association of Illinois will be held on April 4 and 5, according to an announcement by W. R. Shaw, Jacksonville, secretary of the association. Convention headquarters will be the Jefferson Hotel in Peoria, Ill. Committee chairmen as announced at this time will be Erwin Eichenberger, in charge of the speakers' program; George L. Folkers, the ladies' program; George Bushman, door prizes; and Frank Eynatten and J. J. Walters, hotel, banquet, and cocktail hour.

A cocktail hour and stag are scheduled for Monday night, April 4, and the banquet will be held on the following night.

Iowa

A forthcoming conference, to be sponsored jointly by the Iowa Chapter of the American Society of Heating and Ventilating Engineers, the Sheet Metal Contractors' Association of Iowa, and the Engineering Extension Service of Iowa State College, will be known as the 8th Heating and Air Conditioning Conference. Iowa State College campus will be headquarters for the sessions which will be held from Monday, March 21, through Wednesday, March 23.

Some highlights of the subjects to be covered in the conference are Trends in Institutional Heating, Salesmanship and Customer Relations, Panel Heating, and Sheet Metal Problems dealing with application of aluminum, copper, and stainless steel.

Registration time will be 8:30 on Monday morning, March 21. Marvin Gould of Iowa State College, Ames, is conference secretary.

Ohio

The Ohio Sheet Metal Contractors' Association will hold its annual convention on March 7, 8, and 9, at the Biltmore Hotel in Dayton, according to an announcement by A. J. Hoke, treasurer of the convention committee of the association.

E. D. Busch, president of the Sheet Metal, Furnace and Roofing Contractors Association of Dayton, is chairman of the convention committee for the Ohio association.

Registration for the convention will take place on Monday, March 7, at 10 a.m. and will be followed by a business session at 2 o'clock Monday afternoon.

An address by Philip C. Young, president, will open proceedings on Tuesday at 9:30 a.m. His message will be followed by a welcoming address by Mayor Lohrey of Dayton. Other featured speakers on Tuesday will include R. M. Nelson, Armco Steel Corporation; J. H. Wright, Philip Carey Company; J. D. Wilder and Richard E. Walsh, secretary and president of the SMCNA.

A banquet and dance have been arranged for Tuesday at 6:30 p.m.

On Wednesday, March 9, the convention will close at 10 a.m. with committee reports and election of officers.

The convention committee places emphasis on the fact that attendance at the Ohio convention will not be limited to members of the association. All men who are engaged in the sheet metal industry in the state of Ohio are invited to attend without obligation to join the association.

Canada

The Canadian chapter of the National Warm Air Heating and Air Conditioning Association held its first advanced school at the Canadian Legion Hall, Toronto, on January 5, 6, and 7. The session featured Manual No. 9 for buildings of more than 120,000 Btuh heat loss, affording a study of the application of well-known association codes to larger structures.

A record of previous attendance at one of the regular chapter schools was a prerequisite for admission to the advanced school, and 46 qualified delegates were in attendance.

The staff, assisting F. W. Taylor, chapter engineer, and A. G. Salmon of the technical advisory committee, was composed of qualified men from industry.

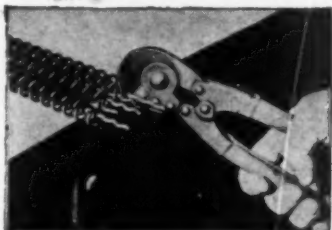
Professor F. G. Ewens of the University of Toronto opened the session with an address on "Transmission of Heat Losses." Feature speakers on the second day were W. G. Hole, Montreal, on "Filters and their Characteristics"; J. W. Powlesland, Toronto, on "Centrifugal Fans"; and H. L. Coleman, Toronto, on "Electric Motors and Their Characteristics." On the final day, A. M. Clark spoke on "Ventilation"; R. L. Broad on "Fuels and Combustion"; C. J. Palsely and R. B. McKenzie on "Controls"; and H. G. Hill dealt with the subject of "Balancing."

In addition to the lectures an advanced problem design was worked out in class.

EQUIPMENT DEVELOPMENTS

Cutting Tools 20

Three new cutting tools under the family name of HandKlip are now on the market. They consist of a shear cutter, for cutting steel strapping; a wire cutter, for cutting soft wires, rods, and 1/4 in. bolts; an angle cutter, for close cutting of

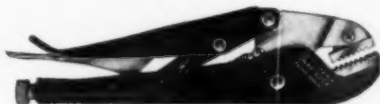


cotter pins, rods and bolts. These three tools have the same power joint principle, and all have pressed steel handles covered with weather-proof red plastic.

H. K. Porter, Inc., Somerville 43, Mass.

Plier Wrench 21

A plier wrench, just introduced, offers the following new features. A new finger-touch lock release opens the jaws immediately, freeing the work and preparing the plier wrench for the next job. A capacity scale indicator, embossed on the



upper handle, shows extent of jaw opening as the adjustment screw is turned. The tool can be preset to any desired jaw opening for production operations. The third feature is an improved swivel jaw, with wider arc, which enables the wrench to grip irregular-shaped pieces firmly.

Two sizes are available, the 10 in. for extra heavy duty, and the 7 in. for smaller requirements.

Seymour Smith & Son, Inc., Oakville, Conn.

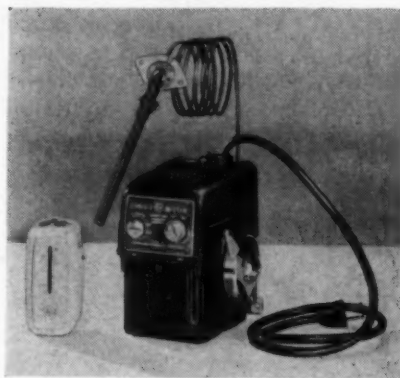
Heat Regulator 22

A heat regulating set, known as Comfort Master, is completely packaged with all operating units incorporated into two major parts, damper motor regulator and room

Use Coupon on This Page

thermostat. It requires only two electrical connections, one of the simple plug-in type from the power unit, the other a low voltage connection between thermostat and motor regulator.

Some of the new features of the unit include a self-oiling hydraulic motor; a power failure feature which returns dampers to check position in case of power failure, thus eliminating fire danger; a thermo-bulb limit control, which prevents furnace from overheating; a fan switch which assures proper



sequence of operation for dampers and blower. A heat anticipating thermostat, precalibrated at the factory to register changes within

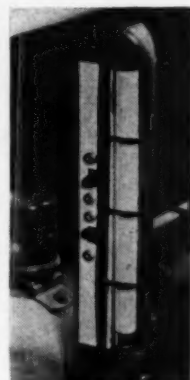
1/2 F above or below its setting, keeps the furnace from overheating in mild weather.

A stoke switch automatically opens the draft when firing and returns the furnace to thermostatic control after a five minute interval.

Automatic Products Co., 2450 N. 32nd St., Milwaukee 10, Wis.

Fluorescent Lamp 23

A portable fluorescent lamp, that comes equipped with a 25 ft extension cord, operates on 110 to 125 volt 60 cycle a.c. current and delivers a bright light which consumes only 8 watts. The lamp is 10 1/4 in. long by 1-3/16 in. wide and 1 7/8 in. high. It uses a standard 6 watt fluorescent bulb with a life expectancy of 2,500 hrs.



A rotating hook provides a simple method for hanging the lamp and an eye-protecting reflector directs the light on to the work. A metal guard serves as a double protection for the worker.

Auto-Test, Inc., 1450 South Michigan Ave., Chicago 5, Ill.

MAIL THIS NOW!

We will ask the manufacturers to send full particulars about the products and literature mentioned. 2-49

Be sure to circle the items you want.

Equipment Developments

20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	

New Literature

214	215	216	217	218	219	220
-----	-----	-----	-----	-----	-----	-----

Manufacturer ☐ Jobber ☐ Dealer ☐

Name.....

Company.....

Address.....

Address: AMERICAN ARTISAN, 6 North Michigan Ave.,
Chicago 2, Illinois

EQUIPMENT DEVELOPMENTS

Use Coupon on Page 105

Power Brake 24

A recent innovation in the field of power leaf brakes is equipped with an air clamping arrangement replacing the original geared-type clamp. With this air clamp, the

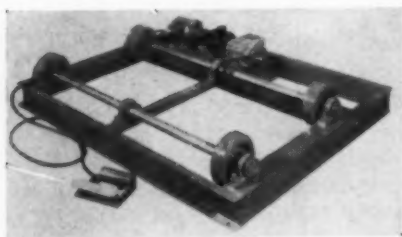


operator can control both ends of the machine simultaneously, or the operator and helper can clamp each end independently. The clamping is thus done with greater speed and accuracy and with a minimum of effort.

Dreis & Krump Mfg. Co., 74th & Loomis Blvd., Chicago 36, Ill.

Turning Roll 25

A unit type turning roll just placed on the market is designed for rotating tanks and cylindrical shapes during welding, painting, and flame cutting operations.



It is equipped with four rubber tired wheels, two of which are driven while the other two act as idlers. The machine is fully adjustable to handle any range of diameters from 3 in. to 6 ft and any length from 12 in. to 12 ft. It has a capacity of 2,000 lbs total weight and is equipped with a variable speed transmission supplying a

range of speeds up to 120 in. per minute. The unit, complete with motor and foot operated switch, measures 60 in. wide x 72 in. long. Shipping weight is 700 lbs.

Reed Engineering Co., Carthage, Missouri.

Portable Ventilator 26

Fresh, filtered air is obtainable through use of a new, portable, window unit ventilator for homes and offices. This new unit, made of all metal, bonderized against rust, and attractively designed, operates from any standard a.c. socket and has movable side extensions so that one standard size unit fits most windows.

The outside section of the ventilator is protected by a canopy against rain or snow. A built-in odor absorber and large filter are designed to screen out most odors as well as pollen, dust, and smoke from the outside air. The filtered and deodorized air is circulated by a built-in 10 in. pressure type blade fan.



In winter, room air is recirculated and passed through activated carbon. In summer, cool night air is drawn through the filter unit and circulated throughout the room.

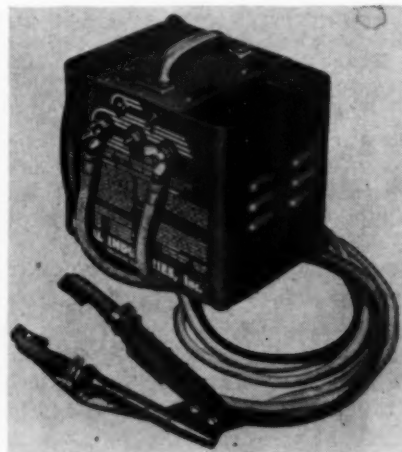
Excel Htg. & Air Conditioning Co., 3715 Belmont Ave., Chicago 18, Ill.

Soldering Unit 27

The new light duty Thermo-Grip soldering tool is a portable unit which operates on the resistance heating principle, eliminating fire hazards and discolored work.

Touching the work with the soldering unit completes the secondary power circuit and causes the metal to heat almost instantly. A handy thumb switch permits close

heat control. The Thermo-Grip conserves power by drawing current only when the unit is in direct contact with the part to be soldered.



A complete set of attachments includes a "plier" for sweating and unsweating copper tubing, soldering lugs, and terminals; a "fork" attachment with two 3 in. electrodes for reaching into restricted places; and a "pencil" attachment with one 3 in. carbon electrode for spot and light seam soldering.

The Thermo-Grip unit complete with carrying case measures 9½ x 6 x 8¾ in., including storage space for the various attachments, and weighs only 16 lbs. High and low soldering heats are 5.3 volts and 4.2 volts respectively.

Ideal Industries, Inc., Sycamore, Ill.

Heat Reclaimer 28

A low-priced heat reclaiming unit has been developed to recapture lost heat from any standard heat generating device whether automatic or hand operated.



The heat reclaimer is easily installed in place of any 24 in. section of smoke pipes having diameters from 5 to 10 in. Electrical connection can be made with any outlet or it may be wired in series with the master control on automatic oil burners or stokers.

Heat units, passing through the smoke pipe, are recaptured by 12 internal heat transfer fins. Motor and blower are automatically operated by a thermostat and the heat is forced through the reclaimer's blower outlet. The heated air is filtered and may be discharged through a duct to any area where it is needed.

C. L. Rayfield Co., 2010 South Halsted St., Chicago 8, Ill.

Soldering Torch 29

The Crown torch, for soldering, light brazing, and heating operations, has been designed to give maximum operation at a minimum of time and cost. Some of its features are an all-in-one tip that eliminates need for extra tips and tip changes, and a fingertip control of flame size and temperature.



A completely self-contained unit, the torch is made of seamless steel tubing, measuring 12 in. long and 2¼ in. in diameter.

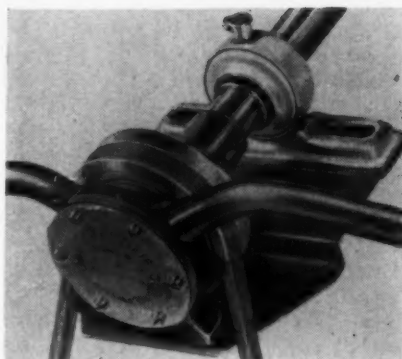
Sully Engineering Ltd., 9304 Santa Monica Blvd., Los Angeles, Calif.

Impeller Pump 30

A new impeller pump (ball bearing line) is now available for evaporative cooler air conditioning use. The manufacturers stress its advantages in installation and operation.

The pump is driven by the fan motor, thus eliminating the cost of a separate motor. Simple instructions make the installation of the pump a matter of minutes.

The pumping principle includes self-priming at all speeds; no metal to metal contact with the moving part; self-cleansing action of the impeller which prevents mineral precipitation; ball bearing construction; positive rotary seal; and low torque for low power consumption.

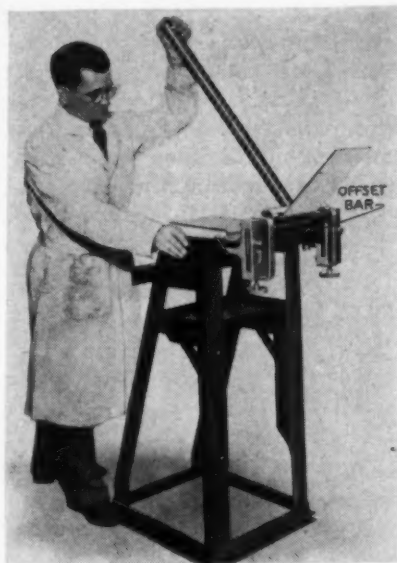


This impeller pump is designed to fit all makes and models of evaporative coolers. Capacities range from 65 gph at 500 rpm to 240 gph at 1,750 rpm.

Jabsco Pump Co., 2031 N. Lincoln, Burbank, Calif.

Bar and Strip Bender 31

A bar and strip bender, recently announced, is designed expressly to make cold bends on the job. It will handle copper, aluminum, brass, and mild steel bar or strip through a complete range of sizes from ⅛ x 1 in. to ½ x 6 in.

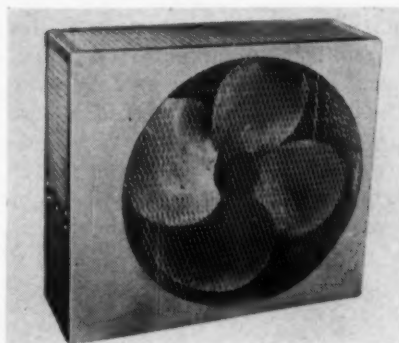


The machine is portable and can be operated by one man. It is simple to operate and will make bends in any direction, twists, short offsets and Z bends. It is especially efficient for duplicating many parts quickly and accurately. The bending head may be mounted in a vertical position which makes the bender extremely flexible for handling the longest length of material.

Graybar Electric Co., 420 Lexington Ave., New York 17, N. Y.

Window Fan 32

A 24 in. window fan, known as the Koolmaster, has been designed for use in homes, restaurants, stores, and public buildings. It is a compact unit, measuring only 10½ x 25¼ x 28½ in. despite its high capacity of 4,700 cfm. The fan is belt-driven and operated by a 1/6 hp 110 volt 60 cycle single phase two speed motor, with a maximum speed of 650 rpm. Some of its outstanding

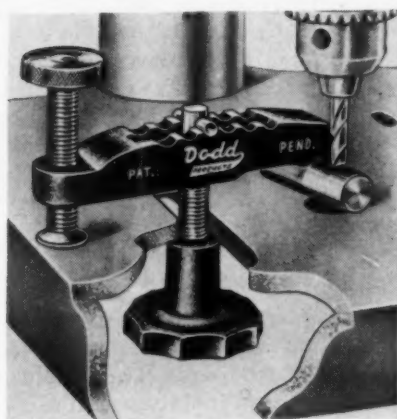


features are portability, ease of installation, quiet operation, and elimination of radio interference.

Air Equipment Co., 1713 West Carroll Ave., Chicago, Ill.

Drill Press Clamp 33

Designed to fill a specific need in sheet metal shops, this new drill press clamp, made of steel and cast iron, is constructed so that it will hold any shape from paper thickness up to 2½ in. The T shape of the clamping screw permits instant



installation or removal. The many pairs of aligned notches with which the clamp is equipped make it flexible enough to fit any drill press with a slot 7/16 in. or larger.

Dodd Products, 405 Atkins Ave., Lancaster, Penn.

EQUIPMENT DEVELOPMENTS

Use Coupon on Page 105

Radius Brake 34

The Di-Acro Radius Brake No. 4 is a 24 in. capacity brake which has just been placed on the market. It is designed primarily for forming duraluminum, chrome molybdenum, and other materials of low ductibility which would fracture if formed to a sharp "no radius" bend. The radii obtainable with this unit are in accordance with the standards recommended by the U. S. Army Air Corps for different thicknesses of these low ductile alloys.



In addition to forming of the materials mentioned above, the Di-Acro radius brake is valuable for forming ductile metals where radius bends are desired for product design.

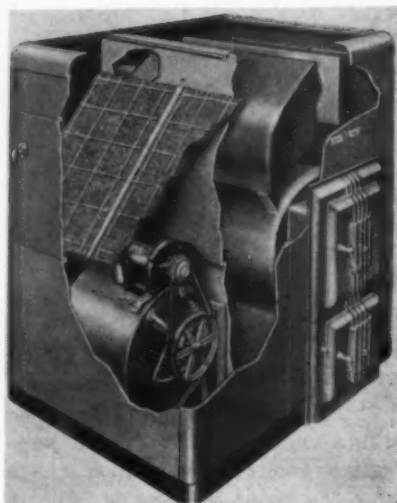
The ability of this brake to both rapidly and accurately duplicate a variety of precision parts makes it extremely valuable for experimental and production work.

O'Neil-Irwin Mfg. Co., 394 Eighth Ave., Lake City, Minn.

All-Purpose Furnace 35

All-purpose furnaces, easily converted to burn any fuel, are now in production with models rated at 85,000, 100,000, and 120,000 Btus. Twin tear drop radiators with a resultant long flue travel and an oversize fire box give improved efficiency on solid fuel operation.

The furnace casings are set on a heavy gauge steel base which guarantees ease of assembly and rigidity. No bolts or metal screws are used in the assembly.



Streamlined styling is featured in the cast iron front which is factory-mounted with concealed hinges. Burner housings for automatic gas or oil operation are available in casings to match the baked enamel finish of the furnaces.

Northwest Foundry & Furnace Co., 2345 S.E. Gladstone St., Portland 2, Ore.

Electric Hammer 36

A portable electric hammer, just announced, is designed as a single purpose tool for use with star drills, chisels, points, and other tools for channeling, bushing, roughing, scaling, ragging, tamping and vibrating. It has a drilling range in concrete of 1/4 to 1 3/8 in. diameter.



This new hammer is recommended for all building trades, installers of equipment requiring anchoring, and all maintenance departments.

Wodack Electric Tool Corp., 4627 W. Huron, Chicago 44, Ill.

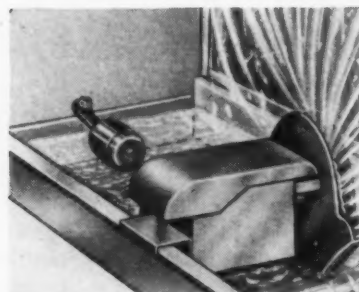
Evaporative Cooler 37

An enlarged Turbospray water distributing assembly is now incorporated in evaporative coolers of 7,000, 10,000, and 12,000 cfm capacities.

This assembly features a 1/6 hp motor and actual field tests are said to prove that 50 per cent more

water can be safely handled by this enlarged assembly.

The Turbospray functions both as a recirculating and water distributing system, taking water from the tank of the air washer section of the cooler and forcing it over the entire mat surface, thus wetting and cleaning the mats in



one operation, and eliminating the need for any separate recirculating pump.

Alton Manufacturing Co., 1112 Ross Ave., Dallas 2, Texas.

Ladder Attachment 38

A safety ladder step which has just been developed is actually an overhead platform which affords the worker greater safety and comfort. Made to fit any standard rung ladder, it is adjustable to maintain a horizontal plane, no matter what the incline angle of the ladder may be. The platform which measures 10 3/4 x 8 1/2 in. is made of 3/4 in. hardwood securely bolted to brackets of cast aluminum. Its surface is covered with material designed to prevent foot slippage.



Only 7 lbs in weight, the ladder step is equipped with a hand slot which makes it convenient for the worker to carry.

Beauideal, Inc., Saginaw, Mich.

IT'S EASY TO SAY "YES"
when you've got a
complete line . . .



. . . and you have with MOR-SUN



"The Sun Never Sets with MOR-SUN"

MORRISON

STEEL PRODUCTS, INC.

BUFFALO 7, N. Y.

It doesn't make any difference whether it's an efficiency home or a custom-tailored house, MOR-SUN dealers have a modern factory-assembled, factory-packaged, die-pressed steel MOR-SUN winter air conditioner to fit! And it doesn't make any difference whether there's installation room in a space-saving closet or a spacious rumpus-roomed basement!

MOR-SUN dealers now have (in production or in process of tooling) the perfect combination of BEAUTY AND BTU'S to produce indoor comfort — a mass-precision, mass-produced, mass-priced forced warm air furnace!

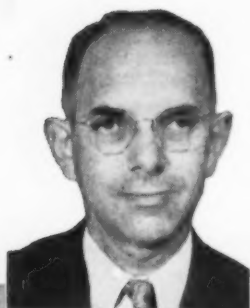
That's why it's easy to say YES — that's why it's so easy to sell!

That's why MOR-SUN is the buy-word in furnaces from coast to coast!



We've grown rapidly *with* Airtemp!

says Peoria, Illinois dealer . . .



MR. J. A. PAGE, President of Conditionaire Inc.



The attractively-lighted, invitingly-arranged showroom of Conditionaire Inc., 3206 N. Adams, Peoria 3, Illinois.

Mail Today for Details!

AIRTEMP DIVISION OF CHRYSLER CORPORATION
DAYTON 1, OHIO
Send "Packaged" air-conditioning information to:

Name _____
Address _____
Phone _____
Kind of business _____ AA-2-49

• You know what it means to sell a *dealer* on a product! Talking may interest him, advertising may influence him, but only a record of sales and satisfaction will convince him that a product is good and—*profitable*.

Mr. J. A. Page, President of Conditionaire Inc., proudly reports after "two short years" of selling the complete Chrysler Airtemp line of heating, air-conditioning and refrigeration, that he's definitely sold on this product.

"The Chrysler Airtemp line supported by Chrysler Airtemp's national advertising program, Chrysler Airtemp's excellent engineering skill and its basically sound dealer organization has enabled us to grow very rapidly in the two short years we have been in business."

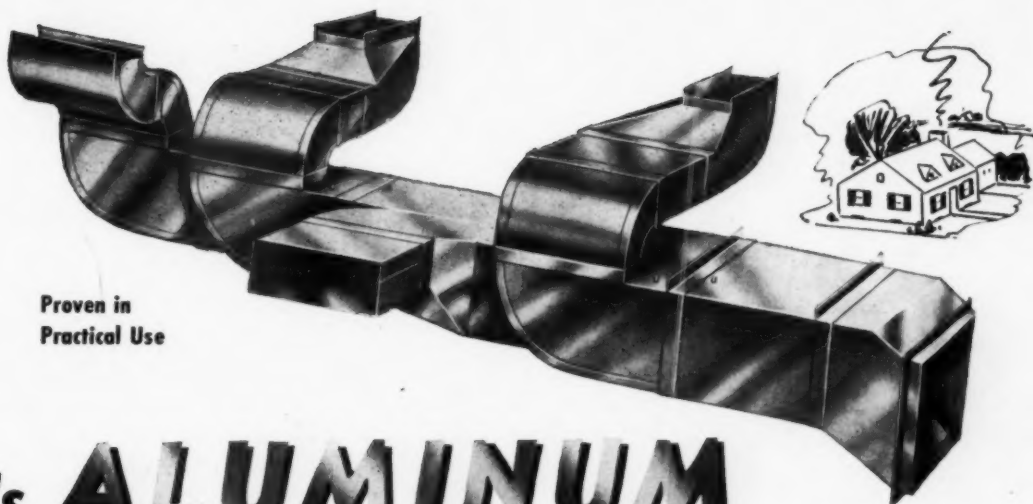
There are still a few choice Chrysler Airtemp dealerships available. Write us for more details about the profitable Chrysler Airtemp line of Air-Conditioning and Home Heating products.

**AIRTEMP DIVISION OF CHRYSLER CORPORATION
DAYTON 1, OHIO**

In Canada: Therm-O-Rite Products, Ltd., Toronto

Chrysler Airtemp

AIR CONDITIONING • HEATING • COMMERCIAL REFRIGERATION



Proven in
Practical Use

It's **ALUMINUM**
It's Feather Light—
It's Stronger—Better Looking—
It's ***CHAR-GALE**—
And **IT COSTS NO MORE!**

Char-Gale aluminum fittings are made to give years of satisfaction to your customers. They are stronger, better looking, longer lasting. They are better for the men who do the job, too. Feather-light, they are easier and cheaper to handle and transport. And what a break their light weight is for the installer!



PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

CHAR-GALE

***Char-Gale Registers**

Made of quality materials, carefully designed, these registers have a 12½ degree downward directional flow. Models for every type of installation are available.

MINNEAPOLIS

CHAR-GALE MFG. CO.

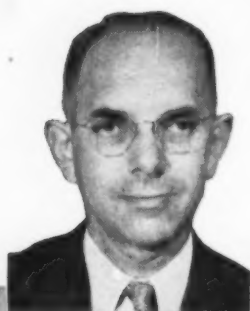
OMAHA

* "NO HEATING PLANT IS BETTER THAN ITS INSTALLATION — NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"



We've grown rapidly *with* Airtemp!

says Peoria, Illinois dealer . . .



MR. J. A. PAGE, President of Conditionaire Inc.



The attractively-lighted, invitingly-arranged showroom of Conditionaire Inc., 3206 N. Adams, Peoria 3, Illinois.

Mail Today for Details!

AIRTEMP DIVISION OF CHRYSLER CORPORATION
DAYTON 1, OHIO
Send "Packaged" air-conditioning information to:

Name _____
Address _____
Phone _____
Kind of business _____ AA-2-49

• You know what it means to sell a *dealer* on a product! Talking may interest him, advertising may influence him, but only a record of sales and satisfaction will convince him that a product is good and—*profitable*.

Mr. J. A. Page, President of Conditionaire Inc., proudly reports after "two short years" of selling the complete Chrysler Airtemp line of heating, air-conditioning and refrigeration, that he's definitely sold on this product.

"The Chrysler Airtemp line supported by Chrysler Airtemp's national advertising program, Chrysler Airtemp's excellent engineering skill and its basically sound dealer organization has enabled us to grow very rapidly in the two short years we have been in business."

There are still a few choice Chrysler Airtemp dealerships available. Write us for more details about the profitable Chrysler Airtemp line of Air-Conditioning and Home Heating products.

AIRTEMP DIVISION OF CHRYSLER CORPORATION
DAYTON 1, OHIO

In Canada: Therm-O-Rite Products, Ltd., Toronto

Chrysler Airtemp

AIR CONDITIONING • HEATING • COMMERCIAL REFRIGERATION



Proven in
Practical Use

It's **ALUMINUM**
It's **Feather Light—**
It's **Stronger—Better Looking—**
It's ***CHAR-GALE—**
And **IT COSTS NO MORE!**

Char-Gale aluminum fittings are made to give years of satisfaction to your customers. They are stronger, better looking, longer lasting. They are better for the men who do the job, too. Feather-light, they are easier and cheaper to handle and transport. And what a break their light weight is for the installer!



***Char-Gale Registers**

Made of quality materials, carefully designed, these registers have a 12½ degree downward directional flow. Models for every type of installation are available.

MINNEAPOLIS

CHAR-GALE MFG. CO.

OMAHA

* "NO HEATING PLANT IS BETTER THAN ITS INSTALLATION — NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"

ANGLE RINGS



**ROLLED IN
ANY QUANTITY**
to your
Specifications

You'll save time and effort by getting the ring that can be fitted on the job easily.

We specialize in rolling angles, tees, channels, bars and special shapes to fit your individual needs—with or without rivet or bolt holes.

Angle Rings are used for many purposes such as reinforcing tanks, joining pipe or smoke stacks, and installing air conditioning fans. Write for our list of standard sizes and discounts—also our new circular just off the press.

**NATIONAL
METAL FABRICATORS**

2140 So. Sawyer Ave. Chicago 23, Ill.

NEW LITERATURE

Use Coupon on Page 105

CAC Folders214

Companion sets of folders are now available on a Regulated Air Circulation Control for use with a forced warm air heating system. The control is designed to produce true heating comfort by ensuring continuous air circulation and automatic reduction of circulation when the burner is off and the air in the heating system is cool. The operation of the control is fully explained in the larger folder.

The same manufacturer also offers a set of folders on air conditioning furnaces. Both of these folders feature a cutaway diagram of the furnace and illustrate the complete range of models, giving capacities for each type.

Jones & Brown, Inc., 441 Sixth Ave., Pittsburgh 19, Penn.

Refrigeration Accessories Catalog215

A 30-page, illustrated catalog, just published, offers complete specifications on a line of valves, liquid gauges, and other fittings for all types of commercial and industrial air conditioning and refrigeration installations.

Also included is a brief description of a wide variety of compressors, condensing units, and auxiliary equipment for use with both Freon and ammonia refrigerants.

The catalog, No. 865, is printed in standard 8½ x 11 format and is punched for a three-ring binder.

Baker Ice Machine Co., Inc., South Windham, Me.

Arc Welding Manual216

Design for Welding, just published by the James F. Lincoln Arc Welding Foundation, is actually a significant record of the progress of arc welding throughout all industry during the post-war years.

The book is composed of abstracts of 82 award papers arising from the recent "Design for Progress" Award Program of the Foundation. The papers were selected and edited by Professor R. S. Green, Acting chairman of the Department of Welding Engineering of Ohio State University. Assisting Professor Green were associate editors Professor D. C. Williams and Professor C. B. Smith, both of Ohio State, in addition to numerous consulting editors chosen from industry.

In the preface, Professor Green states that he has prepared the book with the purpose of making available a record of representative welded designs. He has placed emphasis on projects produced and in operation, with the objective of providing engineers with a variety of ideas which may be adaptable to their own products or structures. A liberal review of cost data on the various designs also affords a good means of making comparative study of methods.



TOP—Here the mechanic is shown lining the ceiling with A.R.A. SHEETS. Wedge up the sheet and staple every 6 inches on each side. The sheet seals the sides, corners, and top.

BOTTOM—A.R.A. SHEETS can be cut just the right size to fit the joist space—the sheets may be connected together with metal connectors. The job really goes up in a few minutes and makes a very satisfactory cold air return.

Practical & Workable A.R.A. SHEETS

Cold Air Returns made from A.R.A. SHEETS save STEEL! And when you install over 600 units in one building project like the new city "Park Forest," Illinois, now being built by American Community Builders, you're really saving tons of it!

Where the joists run the same direction in the basement as your cold air duct, simply line the ceiling and cover the joist space with A.R.A. SHEETS and you have a perfect cold air duct line—smooth and strong, water-proofed, and ready to go to work!

You, too, can use these easy to handle, asbestos-clad A.R.A. SHEETS and get more business in '49. These popular sheets help you get your jobs **FINISHED** and your money **COLLECTED**!

A.R.A. SHEETS are not only good looking, but they have structural strength as well. In fact, they have a Mullen test of over 200 lbs. per Square Inch and have an Insulating Efficiency Rating of K.45 B.T.U. 20 sheets 33" x 48" are packed in a carton for convenient handling.

Lots of Home Owners prefer A.R.A. SHEETS because they don't rattle, and they don't need to be painted. A.R.A. SHEETS are smooth and fit up into place neatly and easily.

*If metal is scarce, don't sing the blues—
A.R.A. SHEETS are the thing to use!*



Write Today for the Free 16-page
Illustrated Booklet No. 892.

**GET GENUINE A.R.A. SHEETS
FROM YOUR JOBBER**

GRANT WILSON, INC.		
Board of Trade Bldg. CHICAGO 4, ILL. 141 W. JACKSON BLVD. AT LA SALLE ST.		
ASBESTOS PAPER	ASBESTOS MILLBOARD	FLEXIBLE
FURNACE CEMENT	PIPE COVERING	DUCT CONNECTIONS
PIPE JOINT TAPE	BOILER CEMENT	BOILER &
COLD WATER PASTE	ASBESTOS SPECIALTIES	TANK INSULATION

NEW LITERATURE

Use Coupon on Page 105

It is interesting to note the present trend in the development of welding applications as evidenced by the fact that more papers speak of welding as used on production items rather than as applied to a single unit, and many papers describe the application of welding directed to reduction of manufacturing costs and to the improvement of quality and performance.

Professor Green points out that this interest in improving existing welding applications is the natural result of the widespread use of welded construction.

Papers included in the book are classed under the following categories: aircraft, automotive, railroad, watercraft, containers, furniture, structures, machinery, and welderies. Each of these sections contains papers describing outstanding accomplishments in the particular field. Discussions in the machinery and structures sections especially evidence the great advance in design in these fields in recent years.

The photographs, drawing, tables, as well as cost information, which are used to augment the award papers in the text add greatly to the practical value of *Design for Welding*.

1000 pages. Price \$2.00, postpaid, in the U. S.; \$2.50 elsewhere.

The James F. Lincoln Arc Welding Foundation, Cleveland 1, Ohio.

Air Dryer Datagram217

The fourth of a series of Datagrams, S.G.D. #4, deals with the location of air dryers in an air conditioning system. The layout given is applicable particularly to air conditioning systems either in the comfort air or industrial field which call for controlled space humidity in the moisture range of 80 to 50 gr/lb. The arrangement shown may also be used to improve the performance of existing systems or increase the overall capacity of systems too small for the existing load.

Bryant Heater Co., 1020 London Rd., Cleveland 10, Ohio.

Metal Finishing Guides218

A set of seven new folders on metal preservation and paint durability on metal are offered as just off the press. Each folder contains a description of a specific metal-treating chemical. The explanatory material is supplemented by photographs showing methods of applying each of these metal finishing agents.

American Chemical Paint Co., Ambler, Pa.

Register Catalog Sheets219

Catalog sheets are available on a line of wall and baseboard registers and one specialty item, a push-in type laundry chute door. The sheets contain price information on each model of the registers in all sizes and finishes.

A & A Register Co., 8327 Clinton Rd., Cleveland 9, Ohio.

REPEAT PROFITS

**GENERAL FUEL OIL FILTERS WITH THE
RED TOP FOR LARGE FURNACES
OR BOILERS • HOT WATER
HEATERS • SMALL
FURNACES
SPACE
HEATERS**

Model 1A-25.
4 3/4" High.
3 1/2" Dia. Filter
Unit Surface
31 Sq.
In. 3/8" Pipe
Openings.

Model 2A-
700. 6 1/4"
High. 4-5/16"
Dia. Filter
Unit Surface
72 Sq. In. 3/8"
Pipe Open-
ings.

Model 2A-
300. 9-1/16"
High. 5 1/2"
Dia. Filter
Size 63 Cu.
In. 3/8" Pipe
Openings.

YEARLY DIVIDENDS

After making the original sale of a GENERAL FILTER, dealers make a dividend each year through the sale of replacement cartridges. The customer, of course, returns to the dealer who made the original installation—and installation is so simple that it can be made in less than two minutes.

If you haven't already done so, investigate the profit possibilities of GENERAL FILTERS. See that each one of your customers has one.

WRITE FOR THE NAME OF YOUR NEAREST JOBBER

GENERAL FILTERS
INCORPORATED

GENERAL FUEL OIL FILTER

12890 WESTWOOD AVE.
DETROIT 23, MICHIGAN

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, LTD., 173 STRACHAN AVE., TORONTO 3, ONTARIO

YOU'LL DO A VOLUME BUSINESS
WITH THE

Kaustline

065HB HIGH BOY

Your prospects for automatic oil-fired winter air-conditioning are unlimited when you stock this Kaustline Model—the 065HB High Boy. It's priced to let you in on the ground floor when you are bidding on a housing project. It's a natural for cottages or small homes, garages, service stations, small shops. It's dimensioned for utility room installation or for basement installation as a pipeless furnace.



Look at this New Ease of Installation

By tipping the unit and sliding out a panel, the air filter can be placed on either right or left-hand side . . . without cutting or patching.

The unit is shipped complete, wired and ready to slide from packing case into position and connect.

SPECIFICATIONS—24½x31½x62½. Right or left cold air intake. Furnished with "Gun" Pressure Type Oil Burner, flange mounted. 65,000 B.T.U., Chrome Steel firepot. 9-inch Blower. Float type Pan Humidifier.

Write for complete details

**BACKED BY NATIONAL ADVERTISING
... BY MORE THAN 34 YEARS SERVICE
TO THE AMERICAN HOME OWNER**



Kaustline
COMPANY, INC.
PERRY, NEW YORK

MODULATED WARM AIR FURNACES . . . SEPTIC TANKS . . . SEPTIC
SEWAGE DISPOSAL EQUIPMENT . . . METAL TILE CONNECTORS . . .
OIL AND GASOLINE STORAGE TANKS . . . HYDRO-PNEUMATIC AND
WATER STORAGE TANKS . . . PRESSURE VESSELS . . . TRUCK TANKS
. . . CUSTOM BUILT FABRICATED EQUIPMENT . . . TRANSFER PUMPS

Luty

AUTOMATIC FURNACES



MODEL B-100

TO THE HEATING TRADE: Here's an OIL FURNACE unit that deserves your closest inspection. It's one of the very few truly UNIT ENGINEERED products on the market.

The Luty OIL FURNACE has many EXCLUSIVE worthwhile features that make it —

EASIER to — { — SELL
— INSTALL
— SERVICE

and thereby make worthwhile profits.

Let us hear from you on your letterhead. We have an interesting proposition for you.

MANUFACTURERS REPRESENTATIVES — INQUIRIES INVITED

Peerless Air Conditioning Company, Inc.
DETROIT 20, MICHIGAN

NEW LITERATURE

Use Coupon on Page 105

Practical Mathematics Textbook 220

Mathematics at Work, by Holbrook L. Horton, is a working manual intended as an aid in the solution of practical engineering problems encountered by men in the shop and in the drafting room. The practical application of arithmetic, algebra, geometry, trigonometry, and logarithms are clearly illustrated by a wide variety of mechanical problems taken from actual practice. Each problem is analyzed and solved by an easy-to-follow, step-by-step procedure.

A standard presentation involving five steps is used for solving all problems throughout the book. These are (1) a clear statement of the problem; (2) an analysis of the problem aimed at developing a method of attack and solution; (3) a presentation of the formula required, if a formula is directly applicable; (4) an explanation of how this formula is derived, or if no formula is used, a presentation of the step-by-step method of solving the problem; (5) the method in which a typical example of this type of problem is worked out. This systematic presentation is designed to provide, as nearly as possible, the equivalent of personal instruction, making it easy to understand and follow the entire analysis and solution of each problem.

Problems are grouped by mathematical classification; that is, problems illustrating some common mathematical principle or method are presented in the same section of the manual. This classification makes it easy to find the type of problem in hand or, at least, one very similar to it. For this reason, it is possible to apply the manual to a great many more problems than would seem possible at first glance.

In addition to the main problem section, five chapters are devoted to reference material and offer a clear review of practical fundamentals of arithmetic, algebra, geometry, trigonometry, and logarithms, so that basic principles or formulas used in problem solution can be readily referred to when necessary.

Detailed explanations are given in a discussion of methods of solution which are a frequent source of difficulty. These cover the reason for use of approximate formulas and the way in which they are applied; the step-by-step procedure in applying trial and error solutions; the use of empirical or "working" formulas, together with a variety of problems which show how such formulas are applied. A chapter on refresher questions in mathematics, mechanics, and strength of materials is included to help clarify points encountered in solution of mechanical problems.

Many tables of useful data, including standard mathematical, logarithmic, and trigonometric tables, round out *Mathematics at Work* as a complete working manual which may well prove an indispensable guide for all who are engaged in mathematical solution of mechanical problems.

728 pages, 196 drawings and diagrams. Price \$6.00.
The Industrial Press, 148 Lafayette St., New York 13, N. Y.

Announcing...
A new sales-making
Fuel-Saver...



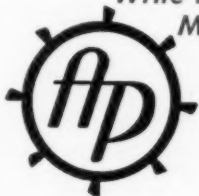
Comfort Master



The smartly-styled
A-P THERMOSTAT

is of the special "heat-anticipating" type, sensitive and accurate. It operates quickly and frequently, turning off before temperature reaches dial setting — to avoid over-run and provide steadier room temperature.

Write for Prices, Sales Materials Today!



Great new convenience for
millions of coal-heated homes

Here's a history-making new development in AUTOMATIC furnace controls that you'll sell *fast* to coal-fired furnace owners! The new A-P COMFORT MASTER incorporates all operating parts into TWO units — a thermostat, and a combination damper regulator and limit control unit. You need make only two electrical connections, one a simple plug-in for the damper regulator unit, and the other an easy low-voltage connection for the thermostat. Simpler to install than any other on the market.

The "Dual-Purpose" Damper
Regulator and Limit Control

is a single, compact, plug-in unit with many unique features. Its Hydraulic Action Motor is submerged in oil, requiring no further lubrication. Thermo-Bulb Limit Control is easily installed in either warm air or hot water systems. Power Failure Safety feature checks dampers in case of power failure. Stoking Safety Switch opens draft when adding coal, closing drafts when gasses are burned off. Adjustment for outdoor temperatures is simple with adjusting knob range from 100° to 350°. Blower Fan Switch also provided for proper sequence of dampers and blowers when combustion air blower is used. Barometric Draft control also available.



Powerful A-P National
Advertising Like This...

is telling your customers **RIGHT NOW** about the new A-P COMFORT MASTER. Plan now on extra sales and profits . . . and help your friends to greater coal heating comfort — and savings . . . with A-P COMFORT MASTER.

AUTOMATIC PRODUCTS COMPANY
 2452 NORTH THIRTY-SECOND STREET
 MILWAUKEE 10, WISCONSIN



DEPENDABLE Controls...
FOR HEATING... AIR CONDITIONING... REFRIGERATION

FOR
Quality Products
Prompt Service
Profitable Cooperation

**Buy from a Herman
 Nelson Distributor like
 Tay-Holbrook, Inc., of
 California**



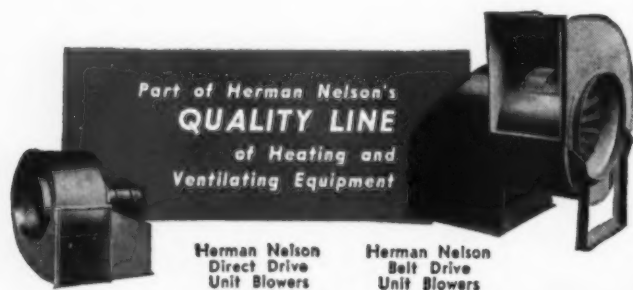
J. Milton Hagler, President,
 Tay-Holbrook, Inc.
 Headquarters at San Francisco
 with Branches at Oakland, Sacramento,
 Fresno, San Jose, Stockton, Berkeley, Santa Rosa

Tay-Holbrook, Inc., recognized as a leader on the Pacific Coast, is another of Herman Nelson's carefully selected Distributors. Dealers everywhere appreciate more and more that it's profitable for them to install top quality Herman Nelson Heating and Ventilating Products and receive friendly, intelligent cooperation from Herman Nelson Distributors like Tay-Holbrook, Inc.

The Herman Nelson nameplate means unmatched excellence of product. Herman Nelson engineers, with 43 years' experience, have developed mastery of workmanship and design . . . resulting in products that provide superior results in actual service all over America.

Of primary importance to every dealer is delivery. Herman Nelson Distributors maintain stocks of both products and materials required for installation, insuring prompt service. Carefully prepared Herman Nelson advertising, sales promotion material and comprehensive engineering data will bring added profits to you as a dealer.

Yes, quality products, prompt service and intelligent cooperation have built an enviable reputation for Herman Nelson Dealers everywhere. They will do the same for you. Get the details from your nearest Herman Nelson Distributor today.



THE HERMAN NELSON CORPORATION
 Since 1906 Manufacturers of Quality Heating and Ventilating Products
 MOLINE, ILLINOIS

INDUSTRY ITEMS

Joseph T. Ryerson & Son, Inc., has recently made several changes in executive personnel. Two changes involved the Philadelphia plant which has recently been enlarged in capacity.

W. A. Redpath has been made manager of the Philadelphia plant to succeed C. L. Hardy, who has recently been made assistant vice president of Ryerson and moved to Chicago. F. W. Eichman has been appointed sales manager of the plant and his entire business



W. A. Redpath



F. W. Eichman



C. H. Hallett

career, like Mr. Redpath's has been spent with the Ryerson organization.

The other announcement concerned C. H. Hallett who has been made manager of sales of the Los Angeles, California plant. Mr. Hallett joined a special training group with Inland Steel after his graduation from college and became associated with Ryerson in 1941.

LINCOLN ELECTRIC Co. of Cleveland, Ohio announces recent appointments and changes in its district managers.

Mr. C. W. Lytton has been made district manager for the Buffalo area. His office is located at 1700 Niagara St., Buffalo, New York. Mr. Lytton has had a broad experience in the field with Lincoln Electric, starting with the company shortly after his graduation from Case Institute of Technology in 1931 with a degree in Electrical Engineering.

Mr. C. M. Richardson has been appointed district manager for the northwestern Pennsylvania district. His office is located at 741 Liberty St., Franklin, Pennsylvania.

Mr. Richardson is also a graduate of Case Institute of Technology, graduating in 1936 with a degree in Mechanical Engineering. He went to work for the company immediately following graduation and has been engaged in sales engineering for the past twelve years in Ohio, Wisconsin, Illinois, Iowa and Buffalo.

Mr. Ray Zeh has been appointed district manager of the Toledo, Ohio district. His office is located at 663 Spitzer Building, Toledo, Ohio.

Mr. Zeh graduated from Western Reserve University in 1937 and started to work that year for the company. He worked in the factory for a year and a half in the experimental department and was then transferred to the sales engineering department.

FAMOUS FURNACE Co., manufacturers and jobbers of heating supplies, Cleveland, Ohio held their 11th annual banquet at the Lakeshore County Club shortly before Christmas. A cocktail hour preceded the dinner.

Hyman Blaushild, president, presented bonus checks to all employees and following a new custom also gave a bonus check to each new bride in the organization and any new mothers of 1948.

The photo below shows the festive group assembled at the Famous Banquet



The employees joined together and presented Mr. Blaushild with a wristwatch as a token of their esteem.

THOMAS H. TERRIO, 34 Dunstan Street, West Newton, 65, Massachusetts was recently appointed distributor for the Boston metropolitan area by the General Oil Burner Corp., Baltimore, Maryland. Development of sales in this territory will be the task to which Mr. Terrio brings many year's experience. He is well equipped to handle sales, installation and servicing of the General Automatic line and make immediate delivery to dealers in the Boston area.

Create a 'Comfort Zone' FOR YOUR CUSTOMERS... with this COMPLETE PACKAGED Home Heating UNIT!

The HACKER Oil Burning CABINET FURNACE is Designed and Engineered for the Average American Home . . . yet is Compact enough to fit easily in the smaller home. It's the First Choice of the Average home owner and of "Profit Minded" Heating Contractors.

100,000 B.T.U. at the Bonnett! Requires only 10 sq. ft. of floor space!

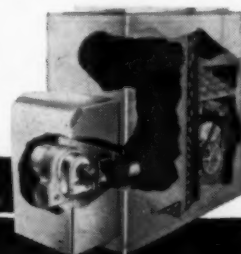
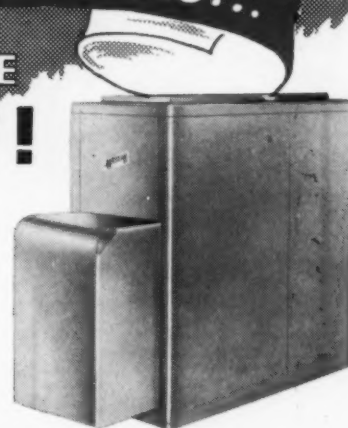
COMPACT . . . High in Efficiency, Lower in first cost . . . Longer in years of Service. Meets Competition for Added Profits! Cabinet length 50", Overall 62", Width 24", Height 52". EYE APPEAL . . . finished in beautiful Baked Metalescent.

Shipped Completely Assembled . . . two men can handle easily. Heavy steel bottom eliminates need for cementing. Nationally known Gun Type Oil Burner furnished with complete set of 4 controls.

Write for the name of the HACKER Distributor nearest you.



Stainless Steel Combustion Chamber, 12" blower, 1/4 h.p. motor, air filter, Automatic Drip Humidifier and automatic Draft Control. Shipping weight approximately 525 lbs.



DEPT. D WATERLOO, IOWA

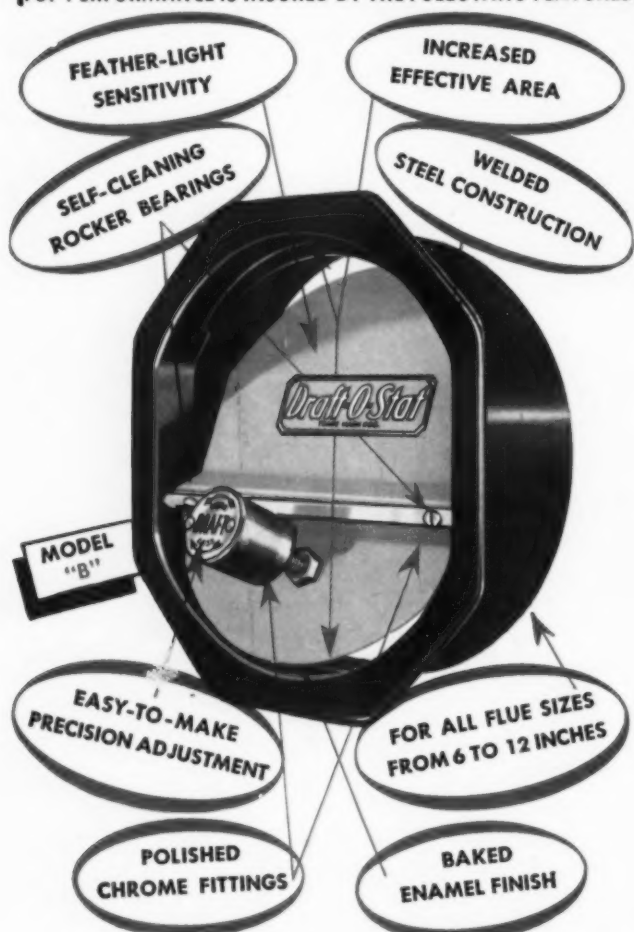
Draft-O-Stat

TRADE MARK REG.

BAROMETRIC DRAFT CONTROL ...will help you build CUSTOMER GOOD WILL and PROFITS

Anything you can do for your customers to cut their fuel costs, give them greater heating comfort, reduce smoke and soot, and lighten their task of furnace tending, will pay off in good will, increased sales and profits. That's why it's good business to install Draft-O-Stat on every new installation, on repair jobs—or any other jobs where the furnace is not now equipped with adequate draft controls. Designed for greatest efficiency and long life, it insures a steady, unchanging rate of chimney draft, providing maximum utilization of furnace heat.

TOP PERFORMANCE IS INSURED BY THE FOLLOWING FEATURES:



Model "A" Draft-O-Stat (original design) available in domestic sizes 14" to 20"; commercial sizes 16", 18", 20" and 24"; industrial sizes 24", 30" and 36".

There is only **ONE DRAFT-O-STAT**
and **HOTSTREAM** makes it!

The HOTSTREAM Heater Co.

2363 EAST 69th STREET • CLEVELAND, OHIO

Manufacturers of water heaters and draft controls

INDUSTRY ITEMS

Louis H. Matthes has been appointed general sales manager of the General Electric Company's air conditioning department with headquarters at Bloomfield, New Jersey, according to a recent announcement by Harold F. Smiddy, general manager. As general sales manager, Mr. Matthes will be responsible for field sales activities, commercial engineering, national user sales and for the activities of the customer sales divisions. Other recent personnel changes in the department included the following appointments: Harold B. Donley is now manager of marketing of the same department.



Louis H. Matthes

Harold R. Donley

Henry M. Brundage

Mr. Donley has recently been vice president and general manager of Hunter Fan and Ventilating Co. of Memphis, Tennessee. Earlier he was general appliance sales manager of Westinghouse Electric Supply Company at New York.

In his new appointment, Mr. Donley will be responsible for direction of sales and merchandising activities of General Electric's air conditioning department. Among the activities falling under his jurisdiction will be product and market sales, the field sales organization, market research, advertising and sales promotion, product planning, commercial engineering.

Henry M. Brundage, former sales vice president of Weber Showcase and Fixture Co., Los Angeles, has been made manager of the automatic heating division.

Prior to World War II, Mr. Brundage headed his own firm, the H. M. Brundage Co. of Norfolk and Richmond, Virginia, distributors of refrigerators, heating equipment, and commercial and domestic appliances.

During World War II, Mr. Brundage was successively deputy chief of Plumbing and Heating Division, chief of Appliance Division, and deputy regional director in New York City of the War Production Board; and later regional director of the Smaller War Plants Corp.

OFFICIALS OF FIVE NATIONALLY-KNOWN WHOLESALERS met in Moline, Illinois, to take part in the third annual Herman Nelson Corporation Distributor Advisory Committee Meeting.

Started in 1946, these meetings of distributor executives with sales executives of the Herman Nelson Corp. were initiated for the purpose of obtaining the advice of the Distributor organization on current and future marketing policies and plans for Herman Nelson



Attending the third annual Herman Nelson Corp. Distributor Advisory Committee meeting, held at Moline, Illinois, were: standing (l to r) C. S. Stock, general sales manager, R. H. Nelson, president, R. W. Nelson, vice president and H. A. Turner, manager merchandised products division, all of Herman Nelson Corp.; seated (l to r) W. H. Abbenzeller, president, Heating Trades Supplies, Inc., Toledo, Ohio; Charles Blakesley, sales manager, Manufacturers Selling Co., Trenton, New Jersey; George Stelzer, vice president plumbing and heating division, Brammall Supply Co., Benton Harbor, Michigan; Raymond H. Dear, secretary-treasurer, Calcasieu Lumber Co., Austin, Texas; and R. M. Mott, vice president, Mott Brothers Co., Rockford, Illinois.

merchandised products including unit heaters, unit blowers and propeller fans.

Members of the 1948 Distributor Committee were: W. H. Abbenzeller, president, Heating Trades Supplies, Inc., Toledo, Ohio; Raymond H. Dear, secretary-treasurer, Calcasieu Lumber Company, Austin, Texas; R. M. Mott, vice-president, Mott Brothers Co., Rockford, Illinois; George Stelzer, vice-president, plumbing and heating division, Brammall Supply Co., Benton Harbor, Michigan; and Charles Blakesley, sales manager, Manufacturers Selling Co., Trenton, New Jersey.

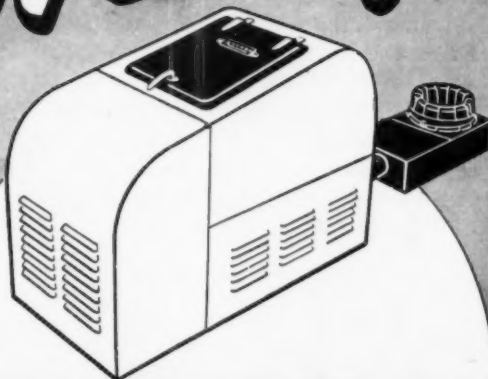
After an inspection of facilities including a new manufacturing plant under construction, Herman Nelson executives reviewed past and present activities of the company.

The committee then examined the company's proposed marketing plans for the coming year. Franchise provisions, pricing, new product development, production estimates, sales promotion and training programs were among the subjects discussed.

APPOINTMENT OF EUGENE K. WRIGHT as sales manager, Manufacturers' Division, Continental Steel Corp., Kokomo, Indiana, has been announced by Edmond P. Severns, company vice president in charge of sales.

Mr. Wright became connected with the company in 1939 as sales representative of the Manufacturers' Division following his graduation from Purdue University. He entered the armed services in 1941, rising to the rank of major. He returned to Continental in 1945 and now takes over the position formerly held by K. H. Striebel who has resigned.

NEW!



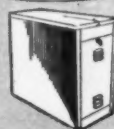
THE CHIEFTAIN *DeLuxe* HOPPER MODEL

New, one-piece welded hopper adds strength, reduces vibration wear and noise. New, much larger capacity . . . 375 lbs. . . lengthens time between hopper fillings considerably. New, double-end motor permits placement of fan to facilitate repair, if necessary . . . reducing maintenance time and cost. New, matched chrome-finish hardware adds to appearance and ease of handling. All other improvements are designed to make this new Deluxe CHIEFTAIN an unsurpassed value in its field!

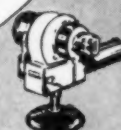
For full descriptive literature on this . . . or any other product in the complete ANCHOR heating equipment line, write Anchor Division, Stratton & Terstegge Co. Inc., P.O. Box 311, New Albany, Indiana.



ANCHOR
OIL FIRED
FURNACE



ANCHOR
DOMESTIC
BOILER

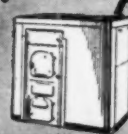


ANCHOR
OIL
BURNER

ANCHOR
GAS FIRED
FURNACE



ANCHOR
COAL FIRED
FURNACE



ANCHOR

America's Finest Heating Equipment

INDUSTRY ITEMS

NORTON R. MILLER has recently joined the United States Air Conditioning Corp. as manager of the company's eastern sales division which includes the New England states, part of New York state and part of Pennsylvania. This sales division will continue to headquarter at the New York office of usAIRco located at 420 Lexington Ave., New York City.

Having been associated with The Trane Co. in New York for eleven years, with the air conditioning division of Chrysler and with several air conditioning engineering firms, Mr. Miller is well-known in eastern sector of the industry.



Norton R. Miller



Paul H. Dow

PAUL H. DOW has been appointed manager of Temperature Equipment Corp., 4505 Euclid Ave. Cleveland, according to C. W. Millsom, vice president and general manager.

Mr. Dow comes to his new post from Bryant Heater Co. of Cleveland, where he has been associated as sales promotion manager for the past two years. Previously he was sales promotion manager and director of sales training for five years at Chrysler Corp.'s Airtemp Division in Dayton.

In his new capacity, Mr. Dow will have charge of sales activity of Temperature Equipment Corp.'s complete line of air conditioning, heating, and refrigeration equipment.

The organization is a distributor of the complete Chrysler Airtemp line.

JOHN E. ECKSTEIN, head of the Eckstein Co., heating equipment distributors in Pittsburgh, received a Certificate of Commendation from the American Legion and a Certificate of Merit from the Amvets for his work as chairman of a Veterans Advisory Committee in that city. The award was made before the Pittsburgh Personnel Association at the Hotel Schenley.

The history behind this award is an interesting story of community responsibility. Only a little over a year ago there were approximately 20,000 unemployed veterans in the Pittsburgh district and the readjustment allowance and relief rolls were crowded. There was considerable discontent over this state of affairs among



CONVERTIBILITY GIVES YOUR CUSTOMERS FUEL SHORTAGE INSURANCE

THE CERTIFIED COUNTERFLOW WINTER AIR CONDITIONER is a compact, double-bodied unit for oil, gas, stoker or hand firing. Readily converted from one fuel to another, Certified units make the most efficient use of any fuel.

Every element of heating comfort is provided—even heat, filtered air, ideal humidity. The Counterflow principle saves fuel by delivering more heat, with a fresh air-change every few minutes. A suitable size for every home provides a maximum of comfort economically.

Write for Bulletin 832-C which gives full details.



- Certified Counterflow Oil Burning Unit, furnished with or without burner, automatic controls, humidifier and draft regulator.



CERTIFIED FURNACE CO.

DIVISION OF STAINLESS & STEEL PRODUCTS COMPANY
1000 BERRY AVE. ST. PAUL 4, MINN.

men who had freely given years of their lives and even their health and parts of their bodies to help win the war. The Pennsylvania State Employment Service called a meeting of business men and put the problem up to them.

Mr. Eckstein had been an Army officer for thirty years and was a veteran of both World Wars. His firm had already initiated a practice of restricting hiring to veterans so he was made chairman of the Veterans Advisory Committee. The distressing situation was improved so rapidly and so well that the above-mentioned awards were made.

JOHN E. HANSLER, Eastern regional field engineer for Delco Appliance Div. of General Motors since 1938, has been named to the position of West Coast regional manager for Delco-Heat, according to A. C. Freimann, general sales manager, Rochester, New York.



John Hansler

A mechanical engineering graduate of the University



John D. Rosebrough

of Illinois, Hansler has been in the automatic home heating field since 1926. In 1933, he became associated with Delco as Midwest regional field engineer and in 1936 was appointed to the position of assistant service manager for the Delco-Frigidaire Div. of General Motors at Dayton, Ohio.

HERMAN NELSON CORP., Moline, Illinois announces the appointment of John D. Rosebrough as manager of the company's St. Louis, Missouri, branch office. He will handle sales of unit heaters, unit ventilators, propeller fans, centrifugal fans and unit blowers.

Mr. Rosebrough, a graduate of Washington University (St. Louis), has been a sales engineer for the past ten years, with special experience in the introduction and marketing of new products.

The new St. Louis sales office, formerly at 231 Vanol Building, Vandeventer and Olive St., is now located at 2188 Railway Exchange Building, 611 Olive St.

J. H. SWALLOW AND R. A. BISSELL have recently been given new responsibilities in the organization of Bryant Heater Co., Cleveland, Ohio.

Mr. Swallow has been made Southern District sales manager for the company after serving as branch manager of the St. Louis office for the past three years. He will make his headquarters at the Bryant factory in Tyler, Texas.

Mr. Bissell is now assistant sales promotion manager of the company, leaving his work as a sales representative in the New York office. He will move to Cleveland and assist in the expanded advertising program for 1949.



No. 360 U. S. ADJUSTABLE CEILING VENTILATORS ARE NOW AVAILABLE

A complete-package unit consisting of the very superior type No. 400 Floor Register (black Japan finish)—for second floor—with a splendidly embossed white grille for ceiling, and a 3-piece telescoping box that adjusts from 4 to 12 inches—thus applicable for ceiling or side-wall inter-room installation — a NEW feature not offered in other lines of ceiling ventilators.

Packaged in strong individual cartons, ideal for the jobber. Requires one-third storage space needed for other lines.

Send your order Now

UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS

KANSAS CITY

ALBANY

Get our latest Catalog and 1949 prices on Gravity and Air-Conditioning Registers—pipe, fittings, and accessories.

if you manufacture...



- space heating units
- air conditioning equipment
- oil burners
- stokers
- gas heating units
- humidifiers

you'll want to buy...



NATIONAL LOCK HARDWARE

"all from 1 source"

- simplified purchasing
- complete selection
- simplified control
- lower shipping costs
- uniform high quality
- prompt delivery



write us for full information

NATIONAL LOCK COMPANY
Rockford, Illinois

Roberts—

(From page 71)

1 per cent in 10 days, net 30 days...18 per cent a year
2 per cent in 10 days, net 30 days...36 per cent a year
2 per cent in 10 days, net 60 days...14 per cent a year
2 per cent in 30 days, net 60 days...24 per cent a year
3 per cent in 10 days, net 60 days...21 per cent a year
3 per cent in 30 days, net 60 days...36 per cent a year

Obviously, with bank interest on straight loans around 6 per cent, sometimes less, and installment loans around 12 per cent, it pays the purchaser to borrow and take cash discounts.

We know some businessmen who pay their rent with cash discounts. However, it is unwise to go all-out for cash discounts without considering other factors. Some businessmen have gone in the red by letting discounts influence them to overload stocks. It costs money to carry an inflated inventory, often more than the discounts earned thereby. Unless you can sell within a reasonable time, it is usually unwise to buy in large quantities to procure quantity discounts. Turnover is a factor that must be reckoned with, although the members of this industry need not worry about it as much as a department store. Too low a turnover means loss, and over-buying often begets low turnover. Consider turnover before quantity discounts.

"What is obsolescence?" is another query often hurled at us by sheet metal contractors and warm air heating dealers. Defining obsolescence isn't hard but computing it is hard. Obsolescence is out-of-date-ness from the standpoint of profitable utility and pertains to working equipment, business property, display fixtures, store fronts, etc. It is brought about by external factors, such as revolutionary changes in technological developments that make equipment out of date while it is still in good condition mechanically, or the introduction of higher-speed equipment or equipment that is cheaper to operate or has more "buy appeal" if it is used in display merchandising, forcing the user of older equipment to buy more modern units in order to stay in business or make profits comparable to those earned by competitors who buy the new replacements. Obsolescence may be included with the depreciation rate, but how much depends upon the case. The reader must estimate it as best he can. However, it is doubtful that he will have to worry much about obsolescence unless he uses a great deal of working equipment.

"I wrote off \$3,000 in bad debts this year and if I charge this to profit and loss it will distort operating results. How shall I handle this write-off?" Queries of this type are frequently heard. All extraordinary expenditures should be charged direct to net worth. If they are charged to current profit they will distort comparative analysis. For example, one warm air heating dealer suffered a fire loss totaling \$14,000. He carried \$10,000 insurance. The \$4,000 loss he charged to operating expense and then complained that his profits for the year were below his average earnings. He was wrong. When the \$4,000 fire loss was deducted his profits were a bit higher than average. This loss should have been charged to net worth. If a corporation, charge such expenditures to surplus.

the popular and profitable

Peerless Line for 49!

The five PEERLESS furnaces shown here comprise the most advanced line of warm air furnaces ever offered for the home market. Refinements in design and construction give you many advantages with which to outsell competition—and there is a PEERLESS furnace to meet every customer's requirements.

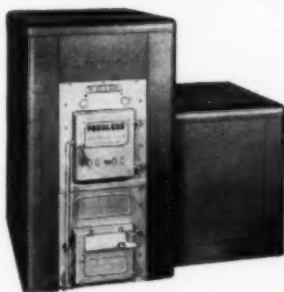
THE SENSATION is a deluxe steel furnace for stoker or hand firing; large blower, automatic humidifier. THE MASTER is an auto-

matic furnace for oil or gas. THE HIGH BOY (illustrated with case removed) is ideal where space is limited; blower forces maximum heat to registers. THE STEEL ROUND-CASE furnace is a favorite for either stoker or hand firing. THE COMBINATION furnace heats economically with either oil or coal.

Write or wire today for complete description of this popular and profitable PEERLESS line.



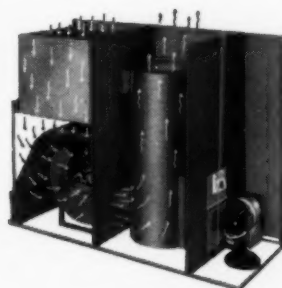
HIGH BOY



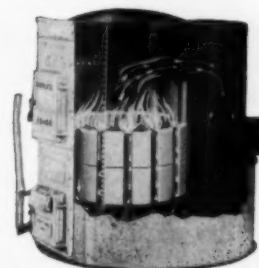
THE SENSATION



THE COMBINATION



THE MASTER



THE STEEL ROUND-CASED

THE PEERLESS FOUNDRY COMPANY 1855 LUDLOW AVENUE
INDIANAPOLIS 7, IND.

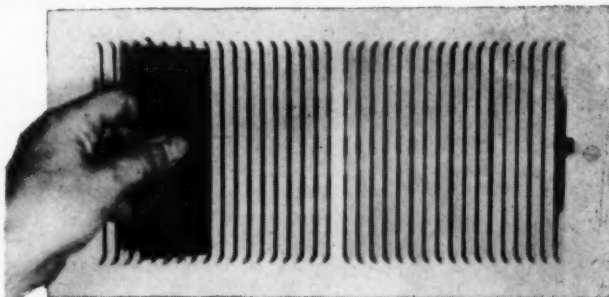
SHALLOW



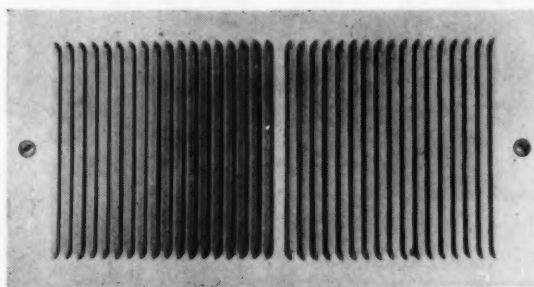
REGISTER

TEN DAY DELIVERY FOR STANDARD SIZES
(UNDER 100 PIECES)

DESIGNED FOR RESIDENTIAL AIR CONDITIONING



STYLE 8TM—SELECTIVE UP - STRAIGHT - DOWN DEFLECTION FROM SHUTTER. RIGHT AND LEFT DEFLECTION FROM FACE.



STYLE 8—GRILLES TO MATCH STYLE 8TM REGISTERS.

Write today for your copy of our complete catalog

REGISTER & GRILLE MFG. CO., Inc.
66 BERRY STREET
BROOKLYN 11, N. Y.

Minnesota Convention — (From page 103)

was the last on the morning's program and H. R. Bostrom, St. Paul, chairman, had arranged for Chris Peterson, Minneapolis, to present a feature talk on the subject and Mr. Peterson prepared several visual aids to supplement his talk. He outlined the duties of an apprenticeship committee and warned of how important it is that these duties be carried out if the industry is to secure and retain the right kind of apprentices. There was on open discussion after the speech.

The afternoon session was taken up with reports of officers and the report of the nominating committee and election of new officers. Adjournment followed.

Fair — Small Ads

(From page 72)

too long it is wasting money. Generally a month's time should be the absolute limit; change of copy weekly has proven to be effective.

12. *Get near important ads if possible.* There are certain types of advertisements in newspapers which have as high reader interest as the news columns; department store layouts, for example. A small ad placed near one of these will have much better chance

of being read by a maximum number of people.

13. *Pick the newspaper carefully.* Generally speaking, individual newspapers have group following in their cities. Make certain that the paper being used is the one with widest possible circulation among the groups of people who are to be reached by your small ad.

14. *Tie in small ads with other advertising.* The theme of small ads should be carried into sign advertising within the office, direct mail and wherever and whenever possible.

15. *Use an occasional large ad in the series.* When business has been exceptionally good, boost the ad budget with use of larger space but pick the day of the week when an idea can be put over with maximum effectiveness and carry through the same theme and signature as in the small ad series.

16. *Avoid familiar type faces.* Ordinarily, if no other instructions are given, small ads are set in type styles and faces carrying a great deal of similarity. An off-the-beaten-track type style helps focus more attention on a small ad.

17. *Watch seasons carefully.* Seasons of the year offer good opportunity for different ideas in small ads; changes should be made to conform with such seasons, holidays or events being held in the community.

18. *Call attention to these small ads.* Cutting out a small ad and pasting it on a large cardboard, which in turn can be placed in the window or at the cash register, will help to secure more interest in the idea being pushed in the small ads.

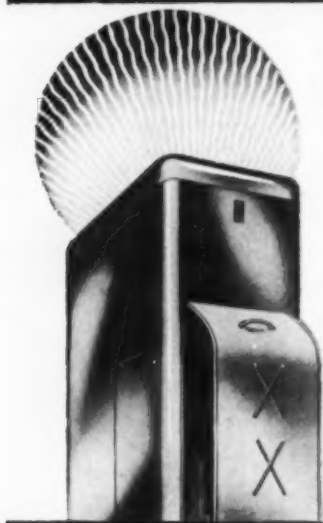
WHEN YOU THINK OF HEATING EQUIPMENT —

Remember

XX CENTURY

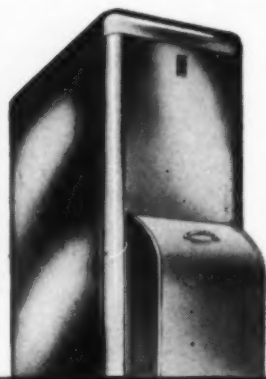
ZEPH-AIR

With It's 54 Years of Engineered
Efficiency in The Heating Field



OIL

Quiet, Economical, Space Saving, Zeph-Air Oil Burning Furnaces, Easy To Operate, Easily Installed.



GAS

Completely Automatic Air Conditioned Gas Furnaces With The Famous Gear Shaped Cast Iron Radiation Surfaces.



COAL

You Buy Quality In Zeph-Air Coal Furnaces. No Costly Service Calls To Worry About.

It Pays To Push Zeph-Air Heating Products — Thousands of Satisfied Users All Over The Country Remember The Dependability And Reliability Their Zeph-Air Furnaces Stand For.

When a Zeph-Air Furnace Has Ended Its Long-Life and Is Ready To Be Replaced — The Customer is Almost Sure To Say — "Years of Uninterrupted Service," "Install Another Zeph-Air."

Cash In On This 54 Years of Customer Satisfaction — Stock Up On Zeph-Air Heating and Weather Conditioning Equipment — Now.

THE XXTH CENTURY HEATING & VENTILATING CO.

96 IRA AVENUE

AKRON, OHIO



**Available
NOW!**



BS & B

**UNDERGROUND
and BASEMENT
TANKS**

With the facts well in hand, Black, Sivalls & Bryson's production engineers "outguessed" the fuel oil supply situation. The result is that BS & B underground and basement oil storage tanks are available NOW in quantities, all you want!

These underground and basement tanks are top quality welded steel, fabricated by a manufacturer of more than 55 years' experience. Capacity—approved by U. S. Underwriters' Laboratories. Legs extra. Write or wire TODAY for prices and complete delivery information. Black, Sivalls & Bryson, Inc., Power and Light Building, Kansas City 6, Missouri.



We Ship



**Rolled-Rite
STEEL
Angle Rings**

**Everywhere
in the U. S. A.**

Sheet Metal Contractors from Coast to Coast depend upon Chicago Metal Mfg. Co.'s *Rolled-Rite Steel Angle Rings* for quick, tight sheet metal pipe assemblies.

Regardless of whether you are installing an exhaust, fume disposal, dust collecting or ventilating system, you can save time and effort and do a better job with Rolled-Rite Steel Angle Rings. They are accurate in every dimension, uniform in curvature and free from distortion. Available in 6" to 36" diameters, larger sizes rolled to order.

Write or telephone for list of sizes and net price list.

**Also Sheet Metal and
Heating Supplies**

- * Moncrief Furnaces—Coal - Oil - Gas
- * Oil Burners
- * Oil Gauges - Oil Filters - Automatic Oil Lifters
- * Blowers - Humidifiers
- * Master Blowertrol - C. A. C.
- * Controls—Minneapolis-Honeywell - Sampsel
- * Field Barometric Dampers & Safety Furnace Controls
- * Western Turbine Ventilators
- * Accurate Ventilators
- * Conductor Elbows - Miters - Etc.
- * Sheet Copper Cold and Soft Rolled
- * Blow Pipe Ells - Blast Gates
- * Registers—U. S. and Minneapolis-Honeywell

Complete Catalog on Request.

CHICAGO METAL MFG. CO.

3733 S. ROCKWELL STREET, CHICAGO 32, ILLINOIS

Kruckman—Washington Letter

(From page 63)

for scarce commodities which basically affect essential industrial production or the cost of living, and to limit unjustified wage adjustments which would force a break in an established price ceiling.

To authorize an immediate study of the adequacy of all production facilities for materials in critically short supply, such as steel; and, if found necessary, to authorize government loans for the expansion of production facilities to relieve such shortage; and furthermore to authorize the construction of such facilities directly if action by private industry fails to meet our needs.

They are enthusiastic about the plan to raise the minimum wage from 40 to 75 cents an hour; to pass more legislation for anti-trust laws to protect small business; to continue parity of income to farmers, resting on price supports; to continue rural electrification, more farm housing to be built by the Government; to supply abundant funds for Federal support of schools of all grades in every state and community of the nation; to give social security protection to farmers and to others not yet covered; to extend the TVA form of development to all great river basins of the nation; and to spend billions on the rivers for more navigation and reclamation of arid lands; to improve streams in all parts of the country for better navigation, as well as harbors on the coasts; and to expand the flood control program. They back up Mr. Truman's

program for the St. Lawrence Seaway and Power Project; and for legislation to keep the petroleum reserves under the sea vested in the Federal Government.

The T-E-W housing bill when enacted is to be accomplished in seven years at a cost to the Government of \$9 to \$12 billion. And they support his Budget message, which eventually will place \$20 to \$25 billion in the hands of the armed services to prepare proper national defense. It is this program which is expected to place great pressure upon the steel, iron, aluminum and lead resources of the country. Word is that most of the money will be spent on these materials in their primary form as well as in the form in which they are produced by manufacturers of equipment and machinery and other finished goods.

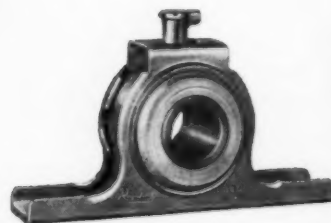
Another interesting aspect of the Inauguration is a certain similarity in what has been happening to the events that culminated in the Inauguration of Andrew Jackson over 125 years ago. Jackson, the hero of New Orleans, was an aristocrat, but he was honest, forthright, very courageous, and had the gift of saying the thing that seemed to mirror the thought of the common people of that day. These were the people who lived in the backwoods and in the remote states and towns of the period. These people had never had a real voice in the making of the government. The government had been conducted by the oligarchy from Virginia, from the Tidewater region, the men who were born under the British flag and who had fought the Revolution to success, and who honestly believed that government should be conducted by the chosen people

**Now you can
afford *Randall* quality
on every job...**



Specify quieter, smoother running, longer lasting Randall Pillow Blocks on every installation. New, low cost models . . . new specifications . . . make the famous Randall line more complete than ever.

There's a Randall that's right for every air handling need . . . and you can afford the right Randall.



- **New, low cost Randall Sintered Bushing Pillow Block** is self-aligning, self-lubricating, with wool felt packed reservoir housing.

Free . . .

Write on your letterhead for new Randall Catalog 49.

Randall Graphite Bearings, Inc.

609 W. Lake St.

Dept. 211

Chicago 6, Ill.

*You
get* →

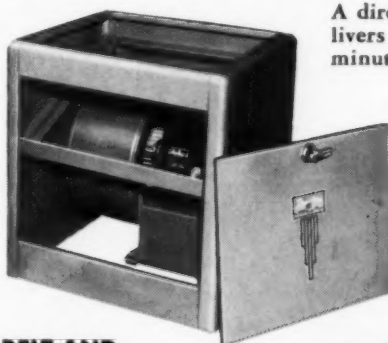
**COMPLETENESS
AND
DEPENDABILITY
WITH
*Profit***

IN *Peerless Electric* PACKAGE UNITS AND BLOWERS

• Peerless Electric blowers and package units are manufactured *complete* in the Peerless plant. Peerless is *not* an assembled line.

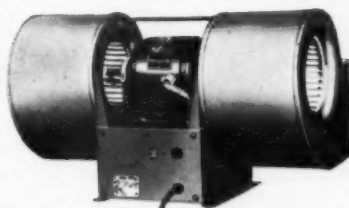
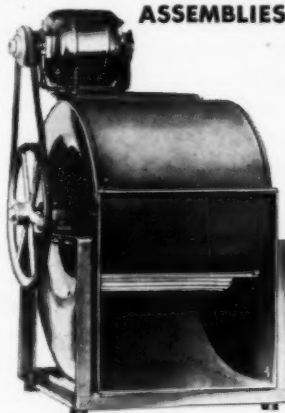
Peerless equipment is *dependable*—you minimize service worries because Peerless equipment is designed and engineered from 56 years experience in producing quality electrical apparatus. And you'll find that Peerless blowers and package units are priced right to earn a profit for you. Write for detailed information.

PEERLESS ELECTRIC AIRBOY BLOWER ASSEMBLY



A direct drive blower that delivers 850 cubic feet of air per minute. 3-speed blower with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced. The two motor bearings are the only bearings in the unit. Also supplied with cabinet and air filters as a complete package unit.

BELT AND DIRECT DRIVE BLOWER ASSEMBLIES



You'll find Peerless blower assemblies in many nationally-sold air conditioning furnaces of the finest quality. We furnish both of these assemblies ready to install in your own furnaces or cabinets. The many fine construction qualities of these blowers add valuable sales features to your heating units.

THE PEERLESS ELECTRIC COMPANY
ESTABLISHED 1893 • WARREN, OHIO

Peerless Electric
MOTORS • FANS • BLOWERS

THE GENERAL AUTOMATIC CONVERSION BURNER MODEL

"G.A.F."

Gets Accounts Fast!

That's exactly what G. A. F. does for hundreds of profit minded dealers . . . it GETS ACCOUNTS FAST! First, because it's priced right for quick sales. Second, because it's made right for dependable quiet operation. Third, because it's such a big fuel saver.

QUICK LOW COST INSTALLATION

is one of the features that is enabling hundreds of dealers to make QUICK profitable SALES with the G. A. F.



Model GAF

A complete unit, ready for installation, with standard controls. 1/6 H.P. Motor. Blower tube in 3 lengths (7", 10", 13") 3 gal. per hr. max. cap. Baked enamel, crinkled grey finish. Ready for quick installation. Immediate delivery in any quantity. Thousands of satisfied owners.

CONVERSION BURNERS

Up to 20 Gals. Capacity

Complete line of conversion burners up to 20 gal. capacity. Also an extensive line of winter warm air conditioners, oil fired boilers, commercial water heaters. If you want to GET ACCOUNTS FAST this spring—remember, valuable dealer franchises are still open. Write or phone today.

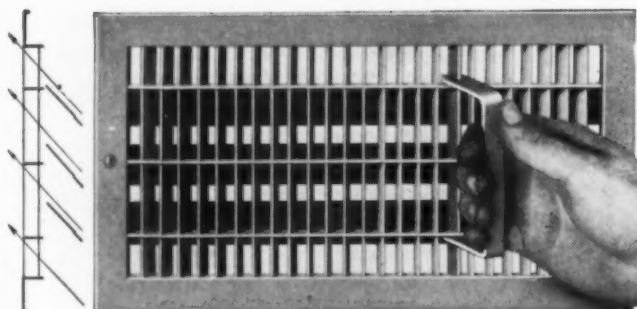
GENERAL Automatic

CHECKS FIRST . . . for thrifty comfort

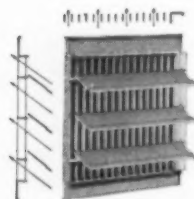
GENERAL OIL BURNER CORP.
2300 Sinclair Lane, Balt, 13, Md.

INDEPENDENT

"Fabrikated" WALL GRILLES WITH DEFLECTING VANES



Style 321-A grille
with deflecting vanes



Rear view showing
adjustable deflect-
ing vanes



ACCURATE and positive com-
pound deflection of air flows
can be readily secured with these
"Fabrikated" grilles. Directional ad-
justments may be made when grilles
are installed; or grille bars and vanes
may be adjusted after installation
to meet unforeseen or changed
requirements.

Each grille bar and each deflecting
vane is adjusted *individually* with
a special two-pronged tool included
with each shipment. Locking of
grille bars and vanes is not required
because they are held firmly in
place — no vibration — no rattle.

Write for Our New Catalog No. 48.



Always Leading — Always Progressing

THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET • CLEVELAND, OHIO

of the day. They regarded themselves as peculiarly gifted and prepared for this business of governing.

Most of the Revolutionary heroes were still alive. Jackson stirred the imagination of the populace of his day, and he was swept into office by a huge majority. At his Inaugural the frontiers people came to Washington, and they pressed into the White House, and when they got inside they spilled whiskey on its floors, smeared the native cheeses on its floors and walls, and broke windows, furniture and tableware in their enthusiasm about the success of their candidate. The day after the Inauguration they were lured out of the White House by vast tables which were set up on the grounds and loaded with punch, whisky, and great cheeses and bread. Thus they finally worked off their ardor, and gradually drifted back home to Kentucky, Ohio, Tennessee, West Virginia, and the other states from which they had made their long and toilsome trek. Like the Inaugural visitors of today these earlier Inaugurators were the symbol of a complete change in the thought and habit of government. It was in the Jackson Administration that the nation learned the ideal that "To the Victor belongs the Spoils." The present ideals are more elevated, and less selfish—at least theoretically.

Open for Discussion —

(From page 84)

the air distribution to that required for winter conditioning.

Whether or not the home builder can afford complete automatic heating and cooling equipment when he first builds his home, recommend the inclusion of an air distribution system. It will enhance the value of the property, and you can assure the prospect that it is an investment that will pay dividends in the future. Wise buyers will more and more look for this feature in future homes.

HOMER C. INNIS, JR.

Booth Sheet Metal Works
Beaumont, Texas

• Mr. Innis is the manager of the heating and air conditioning department for the Booth Works. In a letter accompanying the above article he tells us that the firm has been an exclusive Chrysler Airtemp dealer and distributor in a seven county area of southeast Texas for some time. The air conditioning and heating department has been expanding and thus furnishing a greater volume of business for the sheet metal division.

Booth's fabricating plant designed and constructed metallic lifeboats during the war and designed, fabricated and installed forced air ventilating ducts, galley furniture, cabinets, cowl ventilators and wind scoops in naval vessels. So the firm fabricates and installs all duct and metal work needed in any heating or air conditioning installations contracted for.

Mr. George Booth, the managing partner of the firm is active in civic and area affairs and also president of the Texas Sheet Metal Contractors' Association.

We would like to again remind our readers that any editorial material that they wish to submit for publication will be given serious consideration.—ED.



**CAN IT BE THAT
YOU HAVEN'T
tried THARCO?**

No other furnace cement is like THARCO . . . none can be, since THARCO is the product of a secret Armstrong formula.

So uniformly excellent is this cement that leading furnace manufacturers have used it year after year...and our steady customers among contractors run into many hundreds.

Look Here!

1. SMOOTH AS SILK—can be applied FASTER—no lumps, no wastage.
2. NO SHRINKING, cracking or checking—positive guarantee of gas-tight furnaces.
3. STAYS PUT—greater adhesion to metal parts due to secret Armstrong formula.
4. LASTS LONGER—permanent bond not affected by time or high temperatures.



Yet THARCO costs no more than average quality. So why don't you try it? TRY IT—for jobs installed in less time, for jobs that last in perfect condition much longer.

HANDY . . . Ready to Use

THARCO Asbestos Furnace Cement is conveniently packed in metal containers—sizes to meet every requirement—from 1-lb. cans to 350-lb. drums. Your jobber can supply you, or write today to nearest Armstrong plant for complete information.

Remember "HALL" ? Kumfort Koolers

—they're back—better than ever
—with a New Name!



The New Improved "POLAR BREEZ" AIR KOOLERS

If you handled the nationally accepted and profitable Hall line in '41, you'll be glad to know these top quality evaporative cooling units are again available with many improvements.

New engineering design features, New ROTO-ATOMIZER gives double cooling and washing of air—provides better and greater performance. New GLASS FIBRE filter cooler pads are self cleaning, non-inflammable and need not be replaced or serviced.

POLAR BREEZ cleans outside air from dust, dirt etc. and circulates it quickly and efficiently—lowering temperature an average of 10-15 degrees below outdoors. POLAR BREEZ provides ideal Air Conditioning, temperature and humidity control—automatically—all at a price most businesses can afford.

Here is truly YOUR SALES OPPORTUNITY—a low cost top quality product with every small business and store a prospect. Simple to install and inexpensive to operate.

INVESTIGATE NOW—TERRITORIES ARE AVAILABLE to progressive, reliable Factory Agents, Distributors and Dealers!

"Backed by over 25 years in the Industry"
Formerly manufactured and distributed by the Hall Company,
Cedar Rapids, Iowa.

Write, wire or phone Morton Grove 4594 for details

AIR COOLING ENGINEERING COMPANY

P. O. Box 41, Dept. A

Morton Grove, Ill.

Mirabile— Oil Heating

(From page 81)

Checking the relay:

1. Remove relay cover.
 - a. Is electricity available at No. 1 post?
 - b. If not, check back to source through limit control.
 - c. If power is available, check low voltage circuit by shorting blue and white low voltage posts.
 - c/2. If burner starts then thermostat circuit is open and is not calling for heat.
 - c/3. If burner does not start, relay may be in safety, push safety switch to start burner.
 - c/4. If burner does not start, relay may not be in starting position.
 - d. If burner starts and does not ignite, check electricity at transformer terminals, check for shorts or open circuit.
 - d/2. Check air shutter opening.
 - d/3. If motor does not run but ignition comes on check motor connections.
 - d/4. If motor terminal posts are live and motor will not start, check for open starting switch. If burner ignites when safety switch is pushed, check ignition timing.

Condensation—

(From page 86)

can absorb small amounts of condensation for short periods of cold weather without harm. In walls containing 1 in. of insulation, the sheathing temperature will be reduced to 22 F. This is considerably below the 37 F dew point and condensation will accumulate in the form of frost or ice. In a wall filled with insulation, the sheathing temperature will be reduced still further, to approximately 15 F, and condensation is a certainty.

The correction of condensation problems requires only two things: raising the temperature of the surface on which the condensation is occurring or reducing the dew point of the air in contact with the surface. That is all, and what's more the two approaches can be made simultaneously in some cases. Where a condensation problem exists, it first must be recognized as such to avoid being misled by apprehensions and notions. No material by itself causes condensation except water vapor. The misuse of other materials may encourage it but they will never cause it in the absence of water vapor. Frequently we hear statements like "Mineral wool causes condensation," or "My material is non-hygroscopic, hygroscopic materials cause condensation." It just ain't so! Any material properly used can be protected from condensation.

In an existing structure, we must be quick to recognize the effects of unrestricted vapor flow in order that the situation may be evaluated and remedial measures

Now Only \$2.00 for This Outstanding Book on Air Conditioning

The Third Edition of

AIR CONDITIONING FOR COMFORT

by SAMUEL R. LEWIS

288 Pages—8½" x 9¼"—Cloth Bound

Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known AIR CONDITIONING FOR COMFORT.

Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

Send \$2.00 for a copy today to the address below. We know you will consider this one of the finest air conditioning books you have yet seen, but if you should be dissatisfied with it for any reason whatever, your money will be promptly returned to you.

KEENEY PUBLISHING COMPANY

6 No. Michigan Avenue

Chicago 2, Illinois

Improved New Design!

TRIANGLE

SHOCK
—ABSORBING

Pillow Block

*now priced
substantially
lower!*

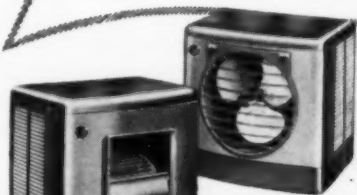


WRITE FOR DETAILS TODAY!

TRIANGLE MANUFACTURING COMPANY • OSHKOSH, WISCONSIN

Designed for fans, blowers and other devices requiring silent operation, perfect alignment, self lubrication and minimum obstruction to air flow. Shown here is one of Triangle's new improved, steel-stamped Pillow Blocks. Special mountings designed to meet every specific need . . . inquiries invited.

YOU will lead the
AIR COOLER PARADE
with the **UTILITY Line**



11 Models

From 1250
to 12,600 CFM

...A COOLER TO
CLOSE ANY
DEAL



★ Easiest to sell, biggest seller... because Utility is best known, best made.

★ Over 200,000 in service... everywhere air coolers are used.

★ New 1949 improvements for even better performance, bigger sales, more profits.

★ Precision-built by most advanced mass-production methods... in 5-acre modern manufacturing plant.

★ Written factory guarantee.

UTILITY APPLIANCE CORP.

4851 South Alameda Street
Los Angeles 11, California

DIVISIONS

Gaffers & Sattler • Occidental Stove Co.

UTILITY APPLIANCE CORP.

4851 S. Alameda St., Los Angeles 11, Calif.
Send Air Cooler handbook and sales manual.

Name _____

Address _____

City _____

Zone _____

State _____

**BIG NEW
HANDBOOK
AND SALES
MANUAL...
SEND
COUPON**



Guaranteed CFM ratings
mean you can fit each Utility
cooler to the job accurately.

IN THE WEST
IT'S WESCO

Exclusive Design Gives *INCREASED* Fuel Economy



... yet
converts easily
to fully automatic
gas or oil operation

**WESCO
MODEL 450
ALL PURPOSE
FURNACE**

The heart of any furnace is the heat exchanger and with the Wesco All-Purpose Furnace this is especially so. An oversize combustion chamber, twin tear-drop radiators, permitting maximum radiating surfaces, and an extra long flue travel deliver ample heat to the powerful forced air system.

You can recommend this Wesco All-Purpose Furnace with confidence to any home owner, as every consideration has been given to develop highest efficiency with any fuel plus full adaptability to automatic operation.

*Wesco Furnaces are
manufactured in capacities
from 80,000 to
800,000 BTU'S.*

If you are not already a Wesco dealer,
there may be an opportunity in your area.
A letter will bring complete information on
our attractive dealer distributor offer.



started before the structure is seriously damaged. Sweat or frost on windows is obvious and may not be serious but rather just annoying. Frost in the attic space is a little more serious and a little harder to detect, until severe weather causes an accumulation which finally melts and drops onto the ceiling below. The first evidence may be a damp spot overhead. Our attention was directed to an apartment building in which the roof supports were so weakened by prolonged condensation that it was necessary to rebuild the roof structure after provision was made for vapor control. Condensation in house walls is becoming more common. Paint blisters are common evidence of moisture migrating through the wood and accumulating under the paint film. The home owner is sure it's poor paint and the painter does his best to make a new coat adhere after removing the old paint. A good coat of paint on the outside of the sheathing may actually be a good vapor barrier, but since it is in the cold part of the wall, vapor must be prevented from condensing on it. Water or frost may actually accumulate on the siding during cold periods and during a thaw it will run out between the siding boards and streak the outside surface. This is an extreme case.

Installing Vapor Barrier

A vapor barrier, in order to be effective, must be kept near the warm surface of the wall so that it acts as a vapor barrier and does not become a condensation trap. Some construction has been jeopardized by the shortage of sheathing papers. When the usual building paper which is not a particularly good vapor barrier became scarce, contractors began a search for substitutes. In many cases, the only alternative was a high grade vapor barrier material, which costs more but was put on anyway. From the standpoint of condensation, this was the wrong thing to do. When this was pointed out to a contractor, he replied, "But I didn't sell it as a vapor barrier, that was sold as sheathing paper." Where it is necessary to use a barrier on the outside, a barrier of equal or better paper should be used on the inside.

In the laboratory we have studied various combinations of house wall materials, particularly the conventional 2 by 4 wall with sheathing, siding, and various combinations of insulation and vapor barriers. Two of these test panels demonstrated very clearly what can be done with a vapor barrier. The panels were tested simultaneously and were identical in construction except for a vapor barrier. These were dry wall constructions with $\frac{3}{8}$ in. gypsum board nailed to 2 by 4 studs. Each panel included three stud spaces 8 ft high. Sheathing, building paper, and siding were applied identically. Siding was painted, with lead and oil paint. Insulation was one inch fiberglass with vapor barrier removed. The alternate panel was finished with $\frac{3}{8}$ in. gypsum board having aluminum foil cemented to one surface. This was a practically perfect vapor barrier. Both panels were exposed to 70 F and 38 per cent humidity on the warm side and 0 F on the cold side. No evidence of condensation appeared in this panel. When it was opened at the end of the test, the sheathing and siding were dry. After a month of testing, frost was found in the unprotected panel, as much as

NOW AVAILABLE

A complete reprint, under one cover, of
Professor S. Konzo's invaluable series
of articles —

The "HOW, WHAT AND WHY" of the New Winter Air Conditioning Manual

Everyone who is now using or expects to use the new "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems" will find Professor Konzo's series a source of much practical help in understanding the Code and correctly applying it to actual jobs. In this great series, Professor Konzo not only explains step by step exactly how to use the Code, but, in addition, tells in detail of the research and experience that is behind each step in the suggested procedures.

Price — Only \$1.00 per copy

AMERICAN ARTISAN

6 NORTH MICHIGAN AVE.

CHICAGO 2, ILLINOIS

AMERICAN ARTISAN, February, 1949



**5 KVA Spot Welder
and 120-Ampere Arc Welder in
DELTA One Combination Unit**

MILWAUKEE

No Other Welder Like It!

Look at these features:

One-piece Welding Horns
A solid, high-conductivity, high-strength, copper alloy casting. Eliminates inefficient electrical joints, reduces maintenance costs, and provides maximum current for spot welding.

Calibrated Current Scale
Infinite adjustment and current control. Gives actual reading of current output. Allows accurate job records to be kept for future reference on identical set-ups.

Full Spot Weld Pressure Adjustment

Gives infinite control from minimum to maximum pressure — especially important for non-ferrous and extremely light jobs.

Simple Contactor

Provides easy operation and control of weld cycle, when operated manually. Easy to change over for timer operations. Equipped with silver alloy contact points for maximum life.

10" Throat Depth

You can spot weld to the center of a 20" sheet.

Wound Transformer Core

An exclusive Delta feature, for extremely low watt-loss.

Coil Insulation

To protect against burn-out, double glass-covered wire is used in all transformer coils, plus a wrapping of glass-mica-glass insulation and fiber-glass tape. Coil will not ground out or short.

— both for considerably less than the usual cost of separate units!

DELTA® "DUAL-WELD" COMBINATION WELDER

Now — with a single machine — you can spot weld, arc weld, braze, and solder! You can work on fine wire without burning or overheating — and spot weld on a production basis up to 16-gauge steel. You can change from one operation to another in a hurry.

Yes, you can do all that with this new Delta Combination Welder. Even so, the price for this dual-purpose unit is considerably under that of any individual 5 KVA spot welder or 120-ampere arc welder! That's due to Delta's unique design, careful engineering, and high production methods.

Delta is a name you can count on for high quality. True, it's a new name in welding. But in the metalworking and woodworking industries, in schools, and for general shop use, low-cost Delta Machine and Power Tools have long been recognized as the finest.

Study the features listed on this page — or have your nearby Delta distributor show you the new Delta Combination Welder, and get a better idea of the many ways that you can use it profitably. Also see the new Delta 5 KVA Spot Welder and Portable Arc Welder. And ask about buying on easy time payments.

Send coupon for free Bulletin AD-453.

*Price subject to change without notice

DELTA MANUFACTURING DIVISION

ROCKWELL MANUFACTURING COMPANY
MILWAUKEE 1, WISCONSIN

TEAR OUT COUPON AND MAIL TODAY!

DELTA MANUFACTURING DIVISION
790-B E. Vienna Ave., Milwaukee 1, Wis.
Please send me Bulletin AD-453
describing the new Delta Welders.

Name.....

Title.....

Company.....

Address.....

City..... () State.....

DW-18

Look for the name of your
Delta distributor under
"Tools" in the classified
section of your telephone
directory.

at NO EXTRA COST

The new quick-opening set-lock
assembly on the Kno-Draft Air Diffusers

Cuts installation and maintenance time

Instant Cleaning and Inspection: With the new Type HD set-lock assembly, the inner element of the Kno-Draft Adjustable Air Diffusers can be quickly removed and reinstalled while the diffuser is in place without affecting its adjustment.



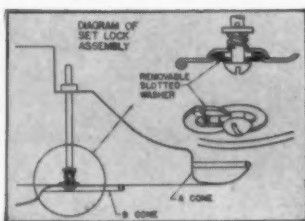
1. Remove cover cone (if used).



2. Press cone—slip out washers.



3. Remove inner element.



New standard equipment.

It takes but a minute—requires no tools

The "B" cone or inner element of the diffuser is secured to the combined suspension and adjustment screws by a springloaded catch which is kept in compression by a slotted washer. The holes in "B" cone pass over the bolt heads. Just press up on cone "B" and insert or remove the slotted washers.

FREE HELPFUL LITERATURE

- ☐ Bulletin K-21: Details on Type HD Set-Lock Assembly.
- ☐ New handbook on air diffusion: Shows how to create "custom-made" air patterns and eliminate drafts.

W. B. CONNOR ENGINEERING CORP.

Dopt. J-107 112 East 32nd Street, New York 16, New York

Please send me the free literature I have checked above.

Name

Company

Street

City Zone State

W. B. CONNOR ENGINEERING CORP.

Air Diffusion • Air Purification • Air Recovery

112 East 32nd Street  New York 16, N. Y.

IN CANADA: Douglas Engineering Co., Ltd., 190 Murray Street, Montreal 3, P. Q.

one quarter of an inch thick, well on its way toward creating a condensation problem.

From this, it is fairly evident what we must do in new construction. To take advantage of the compactness, tightness, and comfort of new construction, we must provide against the contingency of water vapor. Frequently insulation is supplied with a vapor barrier, even with printed instructions. Just as a water bucket is no better than its bottom so is a vapor barrier no better than its edges, including top and bottom. All edges must be tight. A separately applied vapor barrier may be necessary with some types of insulation. In fact it is becoming more evident from results of our laboratory tests and some field observations that a vapor barrier should be applied in all walls constructed north of the 37th parallel which approximates the northern boundary of the states of Virginia, Kentucky, Arkansas, Oklahoma, New Mexico and Arizona. California and western Washington and Oregon are exceptions to this. If insulation is not included when the house is constructed, it is quite likely that it will be added at some future date as fuel becomes more critical and more expensive. Those who are installing insulation in existing walls without providing any vapor control are due for a time of reckoning. A separately applied vapor barrier is a necessity. This does not require tearing of the plaster or the interior finish, however. High gloss oil paints are good vapor barriers when applied in sufficient coats to provide a continuous film. Low gloss paints can then be applied as interior finishes.

The under side of the roof must be protected. In

80th Anniversary Year

1869 - 1949

REPAIR PARTS

for Stoves • Furnaces • Boilers

also

Armstrong Furnaces

Coal - Oil - Gas

with

Fittings - Registers - Supplies

*Your Complete Heating Needs
can be filled by buying*

at

**DES MOINES
STOVE REPAIR COMPANY**

Des Moines, Iowa
Since 1869



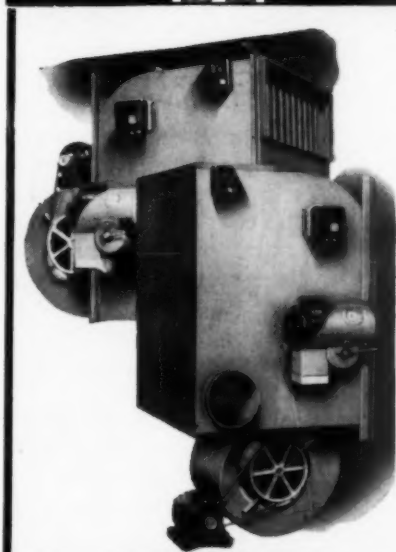
DOMESTIC AND INDUSTRIAL HEATING UNITS

EASIER SALES AND MORE SATISFIED CUSTOMERS



READY FOR INSTALLATION

Floor units are mounted on legs to prevent rusting of bottoms and eliminate air leaks. Factory assembled in attractive casing with new type heat saver and specially designed gun type oil burner. Convenient and quick installation.



The variety of models to suit practically every heating purpose makes QUICK HEAT a recognized profit builder for warm air heating dealers. Practical application of sound engineering principles combined with extensive experience has produced his highly recognized line of superior equipment. Performance and convenience of these units proves business building quality to dealers handling this line.

Overhead Units For Ceiling or Wall Mounts

Dealers:
WRITE FOR
DESCRIPTIVE
LITERATURE

TJERNLUND MFG. CO.
2140 Kasota Ave. St. Paul 8, Minn.

MAKE BIG PROFITS!

WITH THE **NEW** IMPROVED MODEL C-600

CRISE HEAT CONTROL

FOR ALL HAND-FIRED HEATING PLANTS

Here's your best buy in a damper motor type heat control. And it's still the biggest dollar value. The new Crise Model C-600 has everything to make your selling easier, to assure satisfied customers. New, attractive styling—new mechanical features and improvements. Get on the Crise bandwagon now and roll up sales volume. We'll show you how. Write today.

3

MAJOR UNITS with new features



MOTOR

Patented ball bearing type. Reverses electrically. Built-in transformer. Lubricated for life. Spring return should power fail.



THERMOSTAT

Streamlined case richly finished in neutral gold. Heat anticipation feature. Adjustable differential. Silver contact points.



(Hi-limit control)
"SURF-A-STAT"

Installs externally on furnace bonnet. Die cast housing. Calibrated dial, adjustable from 100° to 250°, with stops.



You get the complete package...

INCLUDING LIMIT SWITCH AND SPRING RETURN

When you handle the new Crise model C-600, there are no extras to buy, no added items that might hinder the sale. Crise furnishes everything in one carton including limit switch and spring return that are usually extras.

Write for literature and name of nearest jobber

CRISE MANUFACTURING CO.
COLUMBUS 16, OHIO

Beverly THROATLESS SHEAR



- **UNIVERSAL** . . . makes intricate, angular, radii and straight cuts with equal efficiency.
- **Positive rake** produces neat, clean edges free of burr.
- **Free-cutting** . . . handles lightest material without distortion.
- **Compound leverage** . . . great power with little effort.
- **High grade tool steel blades** adjustable for wear. Easily replaced.
- **B-3 Model** (illustrated) has ball-bearing hold down for easy control of heavier gauges. Beverly Shears also available with H.C. H.C. blades for handling Stainless.

See your Dealer . . . or write direct for information and illustrated Catalogs.

The BEVERLY SHEAR
MFG. Co.
3020 W. 111th St.
Chicago 43, Ill.

Made in 3 models to handle 14 gauge, 10 gauge and 1/2". Welded, all-steel stands available for Beverly Shears.

mild cases now experiencing frost on the nails or sheathing, a little ventilation may all that is required. Louvers equalling 1/300 of the attic floor area should be provided. In persistent cases, a barrier may be required on the ceiling below.

Of course another approach to all of this difficulty is to reduce the humidity in the living space. It has been our observation that in extreme cases where the house is tight and the humidity is running high, there is a characteristic odor in the house to which the occupants have become accustomed. This is quite noticeable to a visitor. In other houses which were humidified to maintain a relative humidity above 28 per cent, the occupants usually thought they felt comfortable but in most cases there was trouble with condensation. As a rule, when the humidity was below 25 per cent, there was seldom any serious condensation difficulty, but the occupants thought they were just a little uncomfortable, the air was too dry, hair was difficult to keep in place. Ventilation can be accomplished through a partially opened window or in the case of a forced warm air heating system, a weather air inlet can be provided to mix ventilating air with the return air going to the fan.

In addition to ventilating the living space, cold air can be used to sweep the humidity out of the outer air space in a wall. Fabricators using sheet metal exterior finishes are forced to provide some ventilation to the weather. The sheet metal is 100 per cent perfect vapor barrier and it is sure to collect some condensation if there are flaws in the inner vapor barrier. This ventilation need not be excessive. One square inch per

NATIONAL OIL HEAT EXPOSITION

MECHANICS' HALL • BOSTON • MAY 16 THRU 20, 1949

IN CONJUNCTION WITH 26TH ANNUAL CONVENTION
OIL-HEAT INSTITUTE OF AMERICA



OVER 80 PER CENT OF EXHIBIT SPACE ALREADY TAKEN BY OVER 100 EXHIBITORS

ELIGIBLE TO EXHIBIT ARE—

Manufacturers of domestic, commercial and industrial oil burners.

Manufacturers of oil burning accessory equipment, installation and service items.

Manufacturers of oil burning boilers, furnaces and heat distribution equipment.

Manufacturers of air conditioning equipment when properly related to oil burning equipment.

Oil companies.

Related Government and research bodies.

**First Post-War National Show in New England
FOR INFORMATION ON SPACE STILL AVAILABLE**

Write . . . Wire . . . or Phone

Oil-Heat Institute of America, Inc.

6 East 39th Street, New York 16, N. Y., MUrray Hill 5-1638

AIR-FLO

**AUTOMATIC
CEILING SHUTTER
FOR ATTIC FAN**

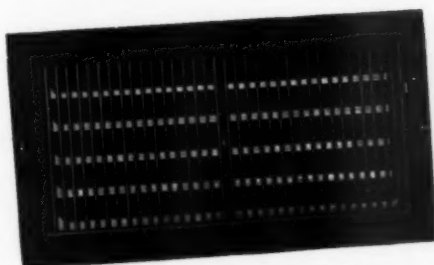
Built so they can be installed practically flush with the ceiling, AIR-FLO Ceiling Shutters present a refined, finished appearance. Their natural aluminum color blends with any decoration, eliminating need for painting, and no grille or winter cover is required. Furnished in 5 different widths, single panel up to 73" long. No operating mechanism shown. Built-in fusible link. Meets fire underwriters requirements.

WRITE FOR NEW CATALOG 43-C

Illustrations and details of the complete AIR-FLO line.

AIR CONDITIONING PRODUCTS CO.
2340 W. LAFAYETTE BLVD. • DETROIT 16, MICH.

AIR-VANE FORCED AIR REGISTERS



No. 802 AIR-VANE Forced Air Register

Made By
ROCK ISLAND
... You Know
They're Good!

Quality of equipment is essential to the performance and life of any modern forced warm air heating installation. You'll find that Rock Island's AIR-VANE Line will fill the bill for you on the most exacting jobs. They're constructed with vertical or horizontal vanes for right or left or downward deflection of air flow. Multi louvre dampers for closing and 15 degrees downward directional air flow are standard. This versatile model is also available with single louvre in wall or baseboard registers. Check the complete Rock Island line ... if it's a Rock Island Register you KNOW it's good.

ROCK ISLAND REGISTER CO.
2435 FIFTH AVENUE
ROCK ISLAND, ILL.

MONMOUTH HUMIDIFIERS



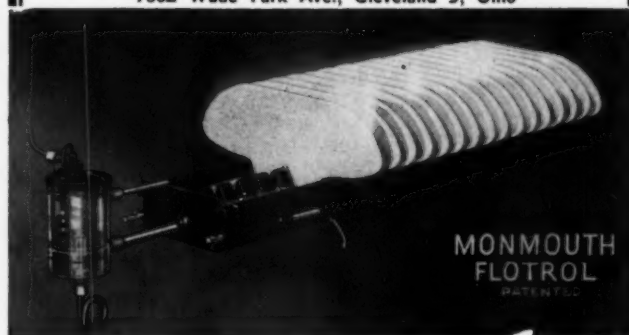
Monite ceramic diffusion plates (originated by Monmouth), acid and heat resisting, are now redesigned for greater efficiency and durability. Give rapid water absorption, free vapor diffusion, easy cleaning. In evaporating capacity, each plate equals 50 sq. in. of water surface.

A complete line for all purposes!

- FLOTROL—the LEADING Humidifier for warm air or air conditioning.
- MICRO-FEED—the simple, low-cost control for drip feed operation.
- Monmouth HUMIDITY CONDITIONER, gas-operated, for all radiator heated buildings.

Bulletin and prices on request.

THE CLEVELAND HUMIDIFIER CO.
7802 Wade Park Ave., Cleveland 3, Ohio



MONMOUTH
FLOTROL
PATENTED

WHITNEY-JENSEN PRODUCTS

38 YEARS EXPERIENCE

NO. 141 NOTCHER

Notches to 13/16" deep



This popular tool again available



NO. 38 THROATLESS BENCH SHEAR

Capacity—3/16"
Blade Length—5"
Height of Shear—9"
Length of Shear—11"
Width of Shear—7 1/2"

Write for Catalog No. 16-49

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

GET YOUR FOOT IN THE DOOR

GET THOSE
HEATING PLANT REPAIRS
NEW INSTALLATIONS



Increase Sales Contacts with the GRAND RAPIDS FURNACE CLEANER



Yes, here's your "in" to increased business and profits! The famous Grand Rapids Furnace Cleaner not only gets you into the customers basement but gives you an excellent opportunity to check over each heating plant as it is cleaned.

The Grand Rapids Furnace Cleaner puts you right where you can naturally recommend and sell necessary repair work and new installations.

The proven sales plan "A Plan to Increase Your Sales" leads the way to profits! The right to use this manual is reserved to users of the Grand Rapids Furnace Cleaner.

Write for free information today!

DOYLE VACUUM CLEANER CO.

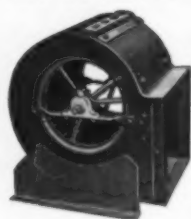
227 Stevens St., S.W.

Grand Rapids 7, Michigan

• BLOWERS •

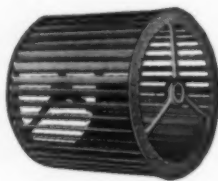
for

Air Conditioning Furnace Manufacturers



The New Bishop & Babcock
Air Conditioning
Blower Assembly
Type "AC"—Design 2

The New Bishop & Babcock
Blower Wheel
For Air Conditioning
Furnace Blowers



The New Bishop & Babcock
All Stamped
Housing Assembly
and Component Parts

Write for Bulletin No. 115

MASSACHUSETTS BLOWER DIVISION

The **BISHOP & BABCOCK** Mfg. Co.
4901 HAMILTON AVENUE CLEVELAND 14, OHIO

linear foot of wall top and bottom is ample for most applications. In the laboratory tests, a wall of this type was converted from a condensing wall to a clear wall by drilling holes from the outside and allowing cold air to enter at the bottom and exit at the top, carrying along the excessive water vapor.

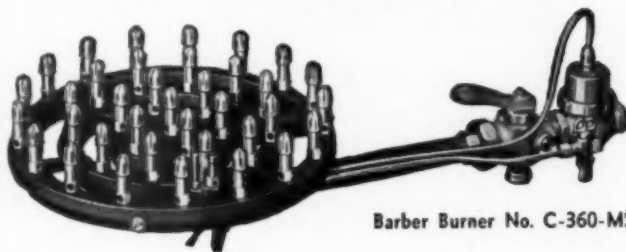
We have encountered several situations where the major source of humidity is the untreated ground in the crawl spaces of unexcavated parts of the foundation. It is an awfully big temptation to go around and close all ventilation openings to such spaces when the weather temperatures are low and consequently the floors are cold. In cases where the crawl spaces are suspected of producing water vapor that is causing trouble, it is recommended that the ground be leveled so that it is fairly even and roll roofing applied directly on the ground. Roll roofing weighing 55 lb per 100 sq ft is considered adequate for this purpose. If the adjoining strips are lapped 4 in., no other treatment is required at the joints.

The use of storm windows has several effects on the operation of a household. In the first place, it does reduce the heat loss and increase the comfort of the occupants. The inner glass surface is raised in temperature and this may eliminate fogging where it was prevalent before. On the other hand, it permits the humidity to rise to excessive values before a warning is given by fog on the inside surface. Relative humidity can go to 55 per cent when the weather is 0 F without condensation appearing on double glass. With single glazing, the humidity cannot exceed 15 per cent to avoid condensation on the windows. It has been

BARBER BURNER

Assemblies with Built-in

Safety Pilot and 100% Shut-off



Barber Burner No. C-360-MS

All individual Barber Burner units are now available complete with valve type safety pilot and 100% shut-off—all built, priced and shipped in one assembly. Some state regulations now require the absolute shut-off device (even the pilot flame) for all installations using LP Gas. Barber offers these assemblies, in *one package*, on our entire line of single unit appliance burners for every use, and for *all* types of gas fuel. They are easier to order, easier to install, with all controls properly coordinated. Prices on request.

Barber makes all sizes of conversion burners for round or square furnaces and boilers. Also burner units for gas-burning appliances for every purpose. Write for Catalog.

THE BARBER GAS BURNER CO.

3704 Superior Avenue

Cleveland 14, Ohio

BARBER Automatic JET GAS BURNERS

Automatic **REZNOR** gas fired unit heaters



MODERN HEATING

We make more
More are in use
World-wide sales

For offices and stores
For industrial plants
For public buildings

WRITE, TODAY, FOR CATALOG U-45

REZNOR MANUFACTURING CO.

21 UNION ST. • MERCER, PENNA.

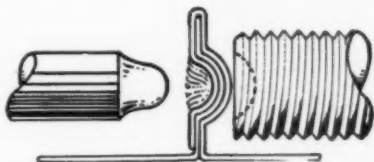
SUSPENDED
OR
FLOOR TYPE

WHITNEY LEVER PUNCHES

No. 6 Punch



This Tool is especially adapted for Button Punching or for Templet work. Punch will strip where handle cannot be opened to 90 degrees.



These punches are often called Tip Punches, and are used to fasten standing seams without making a hole, by simply indenting the three thicknesses of metal.



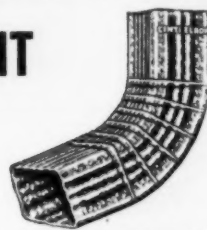
AMERICAN ARTISAN, February, 1949

CINTI ELBOWS

...NEW EQUIPMENT

brings you

FINER ELBOWS



There's only one way to stay out in front in any field and that's to supply the *best available merchandise*. The Cincinnati Elbow Co. with its new automatic equipment has earned this reputation among aggressive sheet metal men. Use Cinti Elbows on your next job . . . you'll find them easier to work with and hot-dipping after forming makes them more durable.

Ask Your Jobber for Them

The Cincinnati Elbow Co.

2627 Colerain Avenue
Cincinnati 14, Ohio

HOW TO GET NEW BEAUTY
in Commercial,
Residential and
Public Buildings

H & K GRILLES

DESIGNED FOR

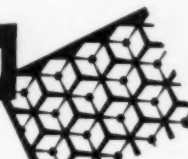
- Air Conditioning
- Heating & Ventilating
- Radiator Enclosures, Etc.

In planning your installations, assure your customers of lasting satisfaction with functionally designed, permanently beautiful H & K Grilles. Whether for new jobs or for remodeling, you can find H & K Grilles in patterns to suit every taste or architectural plan. And don't neglect the safety factor, either; controls and equipment are concealed, yet easily accessible when necessary. When you specify "Grilles by H & K", you're sure of outstanding workmanship in a wide choice of designs and materials.

Write for literature

The Harrington & King
PERFORATING CO.

5649 Fillmore St., Chicago 44, Ill.
114 Liberty St., New York 6, N. Y.

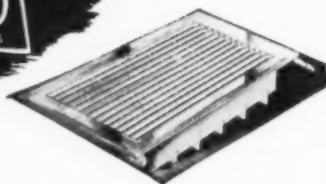


NEW
STANDARD
PERFORATION OF ALL METALS

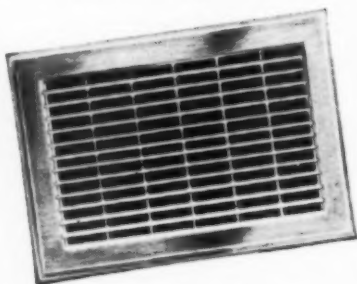
EFFICIENT!

newest -
finest -
strongest

beveled edges
fabricated metal
more free air space
solid construction
no loose parts
ultra-strong baked on
oak finish, longer
wear, matches
flooring. Made in
all standard sizes



Floor Registers



Cold Air Faces

- **FORCED AIR REGISTERS**—Prompt Delivery Standard Sizes
- **MIRRO-GLO LINE** Bathroom Medicine Cabinets
- **PERFORATED METALS FOR EVERY INDUSTRIAL USE**

Write for complete information and price lists

STANDARD

STAMPING &
PERFORATING CO.
3137 W. 49TH PLACE
CHICAGO, ILLINOIS

PERFORMANCE PLUS!

ATH-A-NOR
Furnaces and Parts

★ ★ ★

Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

MAY-FIEBEGGER COMPANY

Manufacturers of Quality Heating Equipment
for Over Fifty Years.

Newark

Ohio

suggested that in cases where there must be a constant reminder to keep the humidity down that one window be kept with single glass for an indicator. This will automatically remind the occupants to watch their vapor penetrating habits. An additional advantage is that condensation will take place on the single glass instead of somewhere else in the house, if that is the coldest surface. It acts much as a safety valve to prevent excessive vapor pressure.

The problem of condensation in summer is just as distressing and perhaps it affects more people. In treating this situation, we are handicapped by the lack of a good source of dry air. Ventilation can accomplish very little and in some cases it may aggravate the condition by carrying more vapor to the cool surface. The only alternative is to prevent the moisture from getting to the cool surfaces. This can be accomplished by dehumidification in some cases. Refrigeration air conditioning systems can accomplish it; desiccant dehumidifiers will do, although that approach may be expensive; hygroscopic salts such as calcium chloride can help, although they are messy by nature and may be undesirable.

A slight amount of insulation added to the cool surfaces, such as walls or floors, and a covering of a suitable vapor barrier usually produces the most satisfactory results. One half inch of rigid insulation board covered with a linoleum product has proven very satisfactory.

And so we can go on to any number of cases and the basic factors will always be the same. We cannot

POWERFUL Turbo-Ventilation
but no power cost!



**SPECIFY Western
ROTARY TURBINE
VENTILATORS!**

- **LIFETIME GUARANTEED** ball bearings.
- **2 M. P. H. BREEZE** keeps Western Turbines in operation. Constant 24 hour exhaust.
- **ALL SIZES** from 6" to 48" throat. Both bearings on same axis always stay in alignment—save trouble and delay from shipping jolts.

Write for complete catalog on all of Western's modern, carefully engineered ventilation equipment.

PLEASE MENTION AMERICAN ARTISAN

JOBBERS
Become part of
our national
distribution
system. Details
on request.

"Always on the job—never on the payroll"

WESTERN ENGINEERING & MFG. CO.

1726-28 E. WASHINGTON BLVD. LOS ANGELES 21, CALIF.

Completely
UNDER CONTROL!



THE NEW 500 M.V. B-60 COMPLETELY SELF-CONTAINED AND SELF-OPERATING CONTROL SYSTEM ORIGINATED BY **General Controls**
★10 years of proven performance.

For natural, manufactured or L.P. gases. For domestic, commercial and industrial applications. System consists of the B-60 pilot operated diaphragm type gas valve, the T-70 Series Snap-action Thermostat, which is scientifically correct in design, and the new improved ingenious PG-9 Pilot Generator which produces 450 to 500 millivolts of operating current, also safety control and main burner ignition.

FOR COMPLETE SPECIFICATIONS request new Catalog.

GENERAL CONTROLS
801 ALLEN AVENUE GLENDALE 1, CALIF.
FACTORY BRANCHES and DISTRIBUTORS
IN PRINCIPAL CITIES

**BUY THE BEST . . . BUY A
REED ALL STEEL BENDING ROLL**



Here, for both production and job shops is the answer to light gauge rolling jobs. Made in five sizes, from 36" x 10 ga. to 72" x 16 ga.

- ★ ALL STEEL
- ★ COMPACT
- ★ BRONZE BEARINGS
- ★ ENCLOSED BEARINGS
- ★ LOW IN COST

Available for prompt delivery, and we do mean **PROMPT**

REED ENGINEERING COMPANY
ENGINEERS AND MANUFACTURERS
CARTHAGE, MISSOURI U.S.A.



Picture of Profits!

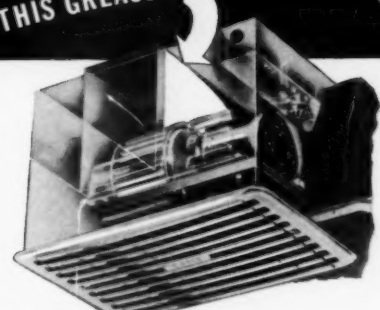
Of course, our fittings are fabricated with extreme care and delivered to you with a minimum of delay—and when they are "Made-Rite" you know the job will be well done. We are ready and anxious to deal with you and you'll be pleasantly surprised at the completeness of our line and dependability of our service.

We solicit inquiries on slitting of metal up to 36 inches wide and 14 gauge and lighter.

"Made-Rite" Co., Inc.

10th and Monroe St. Newport, Ky.

only THE CLIPPER
HAS THIS GREASE **PARTITION!**



Hundreds of pounds of grease and dust suspended in the air as mist pass through a kitchen ventilator during its operating life but **only the Clipper moves this harmlessly outdoors without gumming or wearing the motor.** The Clipper is guaranteed for 5 years because the motor is entirely removed from the air stream. It's easy to install in old or new houses. Mounts in the ceiling between joists with only the dripless ceiling grille visible.



TRADE-WIND CLIPPER

Trade-Wind Motorfans, Inc.
5703 S. Main St., Los Angeles 37, Calif.
Send complete information on the Clipper.

NAME _____
ADDRESS _____

Sketches show how easily Clipper is installed between joists and vented through roof or side wall.

**RIGHT
THE
FIRST
TIME!**

**DWYER
TRANSPARENT
INCLINED
TUBE GAGES**



ACCURATE READINGS ON

No. 102 (2")
Inclined Gage

- Drafts
- Air Velocities
- Slight Pressure Changes

DWYER Inclined Tube Gages are precision-made and easily operated. Continuous indications and fluctuations can be observed while adjustments are in progress. Body is solid, clear, unbreakable plastic—scale is highly visible, graduated to .01". Micrometer adjusting screw for easy, accurate leveling.

DWYER Bulletin
205
sent on request

F. W. Dwyer Mfg. Co.

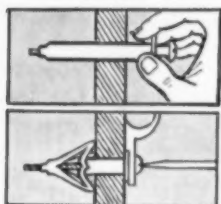
319 South Western Avenue, Chicago 12, Illinois

**A NEW and BETTER WAY TO
FASTEN DUCTS and EQUIPMENT
TO WALLS—The "ANY-WALL" ANCHOR**



- Solves all your hollow wall anchoring problems

For hollow walls, the "Any-Wall" Anchor goes in quickly, holds firm and solid on plaster, wood, metal, wallboard, tile, etc. Solves the need for a simple yet dependable fastener for all applications! Tubular steel anchor, length 2 1/4", diameter 5/16". Draws up to dimension of any wall thickness. Speed tool unfolds anchor easily and quickly.



- 1.) Insert "Any-Wall" Anchor in wall.
- 2.) A few turns of speed tool draws up anchor quickly.
- 3.) Anchor ready to use.

UNLIMITED USES! Saves you time and labor—when a wall fastening job is needed. Excellent for ductwork, iron strap, hooks, controls, cabinets, signs, etc.

**SEND FOR THIS SPECIAL INTRODUCTORY
KIT OFFER . . .**

50 "Any-Wall" Anchors PLUS one \$2.50 Speed Tool . . . Regular \$5.75 Value
YOUR SPECIAL PRICE . . . \$4.95! Postage prepaid.

Prove to yourself that "Any-Wall" Anchors will do a FASTER, NEATER job.

Send For Your Introductory Kit Today

ANCHOR MFG. CO.

1606 Locust St.
St. Louis 3, Mo.

set up unnatural conditions and not suffer the consequences. The laws of nature are inviolate. Sometimes it is expensive to find that out. Perhaps the cost can be avoided if the specifications recognize the situation and include provisions for overcoming some of the disadvantages that want to ride along with the advantages of a modern home.

Farm Ventilation —

(From page 95)

freezing conditions may mean that the years of service of such masonry will be cut down. Tile walls, concrete blocks, or masonry units, when laid up with poor quality mortar, have resulted in costly failures in basement barns. The more severe the climate the more critical becomes the quality of the masonry units and mortar. High-strength, load-bearing masonry units laid up in cement mortar will prove best if the wall is properly selected for its insulating value.

Type of Vapor Barrier

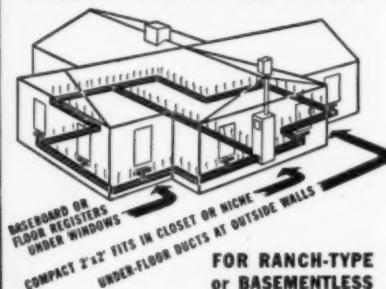
Whether the walls and ceiling are of wood, or masonry, or steel, a water vapor barrier on the interior of the wall consisting of sealed steel sheets or spar varnish and aluminum pigment paint or shiny black building paper or roll roofing just under the finish material, will be needed. This moisture barrier must be applied to, or built into, the side of the wall and ceiling exposed to the warm, moist air. Inside moisture vapor barriers in warm, moist barns must be tight to be effective, while outside ventilation of the wall space

**RADIANT FLOOR PANEL HEATING plus
FILTERED CIRCULATING WARM-AIR**

*Both in one unit - At less than
the cost of conventional heating!*



**The INTERNATIONAL
WARM-AIR AUTOMATIC
OIL or GAS FURNACE**



**FOR RANCH-TYPE
or BASEMENTLESS
HOMES . . .**

A truly great advance in modern heating engineering — that really overcomes the basic problems of home heating. Under-floor ducts eliminate cold floors and chilly walls . . . Base register banishes cold air cascading down windows . . . Elimination of air stratification assures uniform temperatures at all levels. Low cost installation — economical operation.

*Send for literature giving details
and typical layouts.*

**INTERNATIONAL
OIL BURNER CO.**
Park & Spring Aves. St. Louis 10, Mo.

"NOW WE CAN'T DO WITHOUT TRI-SAW"



That, in effect, is what many users of TRI-SAW tell us. They have found out how quickly this tool can do jobs that were always difficult—sometimes regarded as "impossible". If your dealer can't supply you with TRI-SAW, write directly to—

RCS TOOL SALES CORPORATION

CHALSTROM BUILDING

JOLIET, ILLINOIS



8" SCALE—Widest Scale of Any Mechanical Air Velocity Meter!

The FloRite is an unsurpassed sales and service aid in heating, ventilating and air conditioning work. On installation and service work it is used to determine velocity and direction of air flow from registers and grilles for the purpose of checking rate of air delivery, balancing the system and adjusting deflecting vanes and louvers of registers so as to obtain "draft free" air distribution. These tests cut installation and service time, prevent expensive call-backs, and promote customer goodwill. The FloRite is equally helpful for selling new equipment or modernization. It can be used in many ways to convincingly demonstrate discomforts and inefficiencies of a worn-out or inadequate system.

The FloRite is entirely self-contained. It has no hose or probe, and gives all readings required for heating, ventilating and air conditioning work. The detachable handle facilitates use of the FloRite at low wall or high side wall registers. By screwing a $\frac{1}{8}$ " pipe into the handle the FloRite can be conveniently held against ceiling grille.

The FloRite is equipped with a unique scale lock which makes it possible to retain the reading until the lock is released. For ceiling grille readings, this lock is easily manipulated by means of a piece of string. This feature makes the FloRite exceptionally adaptable for indicating air velocity in hard-to-reach or dimly lit locations.

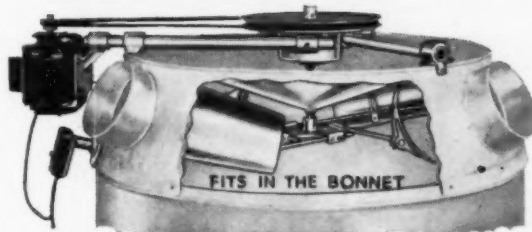
Dealer's Net Price with leatherette carrying case... \$24.00

Ask your jobber for the FloRite or write for Leaflet 739.

BACHARACH INDUSTRIAL INSTRUMENT CO.

7000 BENNETT STREET • PITTSBURGH 8, PA.

Now you can offer **EVEN HEAT DISTRIBUTION** and **MAXIMUM FUEL EFFICIENCY** with **CIRCULATAIRE** The New Improved Booster Fan for **GRAVITY FURNACES**



INSTALLED IN ABOUT
TWO HOURS WITHOUT
REMOVING BONNET

No baffles required — No new furnace pipes—No changes in existing ductwork — No wiring. CIRCULATAIRE not only overcomes cold rooms but also permits Controlled Distribution of Heat to each room as desired.

Thousands of homes with cold rooms—attic flats and other additions need this Low Priced booster fan.

SATISFIED CUSTOMER REPORTS

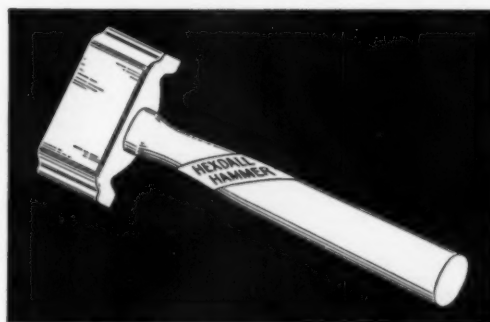
Mrs. W. H. S., Cicero, Illinois, recently converted the attic of her bungalow into an apartment and a heating problem developed; when the temperature downstairs was 76 degrees it was only 62 degrees upstairs. A "CIRCULATAIRE" was installed and now a balanced temperature of 72 degrees upstairs and down is easily maintained.

A COMPLETELY PACKAGED UNIT
Nothing for the dealer to furnish except limited amount of labor.



For literature and price information write—

"CIRCULATAIRE" DIVISION OF CORLETT-TURNER CO.
1001 S. KOSTNER AVE., CHICAGO 24, ILL.



New! HEXDALL HAMMER

(Patent Pending)



Especially designed for use on Pittsburgh Locks, this strong, durable hammer will save hours of time, dollars in labor cost. Workers have told us it is the "world's best balanced hammer". Priced at \$3.45—you'd want it if it cost fifty dollars. Order from your jobber, or if your jobber has no supply, order direct from us.

A. M. HEXDALL CO., MORRIS, ILLINOIS

Manufacturers of Sheet Metal Specialties

**MOUNTING FUEL COSTS ARE CREATING
MORE AND MORE STOKER CUSTOMERS
FOR ME. I HAVE FOUND ECON-O-COL
STOKERS MEAN FASTER SALES
...FEWER SERVICE CALLS!**



ECON-O-COL

The "Stronghearted" Stoker

**BUILT BY COTTA TRANSMISSION
COMPANY • ROCKFORD, ILLINOIS**



**WRITE FOR DETAILS OF
THIS COMPLETE LINE OF
PRECISION-BUILT, HIGHEST-
QUALITY STOKERS**

Sell with Confidence ... Service with Speed ...

CLEAN SWEEP SOOT REMOVER

Clean Sweep thoroughly cleans oil, coal and gas heating equipment while hot, doesn't overheat vital parts—heating plant need not be disassembled. Non-explosive, non-corrosive. Approved by oil burner manufacturers and testing laboratories. It works quickly, leaves no residue, no clogged holes. No special equipment necessary. Now packaged in 6 sizes from small home size to large industrial drums. Ask your Jobber, or write us today.

CLEAN SWEEP CO.

3045 Rolfe Road, Lansing, Mich.

LOOK FOR THE BROOM ON THE PACKAGE



ATTENTION — JOBBERS !

ELBOWS

2, 2½, 3, 4, 5 & 6 INCHES

**SOLID WATER TYPE
CONDUCTOR ELBOWS
45, 60, 75 & 90 DEGREES**

**IN 24, 26 & 28 GAUGE GALVANIZED STEEL
AND 16 oz. COLD ROLLED COPPER**

GEORGE T. GERHARDT CO., INC.

1030 GOLDEN GATE AVE. SAN FRANCISCO 15, CALIF.

WRITE FOR PRICES

is necessary to remove any moisture that does get past the barrier.

Some breathing of the inner to the exterior wall will help because cold air entering the wall when barometric pressures increase will warm up and take on a load of moisture if such is present. Then as the barometer goes down, part of the warm air will leave the wall space.

The planning and installation of ventilating equipment in the dairy barn, as described in this article, should be a fertile field for the sheet metal contractor because of the constant striving for improvement that is characteristic of the dairy farmer. He is always interested in raising the quality of his product and the quantity of his production. Ventilating the stable will accomplish both simultaneously and it is an economically sound thing for the farmer to do.

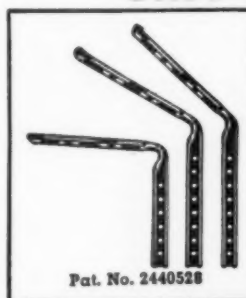
Ventilation Problem—

(From page 96)

as long as heat conservation is necessary. Any time the room gets too hot, it can be cooled off very quickly by opening the box door with the fan running. The damper in the duct can be kept wholly or partially open, according to the need for fume removal. These fumes are heavier than air and will spread over the floor. As long as the fan is running, fumes will be pulled out before they have a chance to spread and diffuse.

A duct running to the floor has a tendency to produce

IMPROVED!



Pat. No. 2440528

• B B •

**No. 12 SHANK
33⅓% STRONGER**

**IMPROVEMENT IS APPLIED TO
No. 15—SQUARE, No. 12—¼
PITCH, AND No. 25—¾ PITCH.**

**SOLD THRU LEADING
JOBBERS EVERYWHERE**

BERGER BROS. CO.

Main Office & Factory

229-237 Arch St., Philadelphia, Pa.

**STRONGER JOINTS
SODERING**

Brazing and Welding



FLUXES

**SODERING
BRAZING & WELDING**

L. B. ALLEN CO. INC. Chicago 31, Ill.

6702 BRYN MAWR AVENUE, CHICAGO 31, ILL.

The Damper Regulator

WITHOUT AN EQUAL

E-Z-ON Damper Regulators

ORDER FROM YOUR JOBBER..

BRAUER has

REPAIR PARTS for all FURNACES
BOILERS, STOVES • *Guaranteed to FIT*

A. G. BRAUER Supply Co.

2100 Washington Ave.

St. Louis, Mo.



Std. Arr. No. 1
for Belt Drive

New and Improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street

Milwaukee, Wis.

AUER GRILLES

Many designs for all purposes—air conditioning, ventilating, radiator enclosure and concealment. Almost any sizes in steel, aluminum, brass or bronze. In selecting grilles, you will find Auer Grille Catalog "G" useful. It gives complete grille data, shows all Auer designs, with dimensions, opening sizes, and full scale details. Sent on request. Order Auer Grilles by name and number.

THE AUER REGISTER COMPANY

3608 Payne Ave.

Cleveland 14, Ohio



SPOT WELD

WITH ACME
"HOT SPOT" WELDERS

- Years of care-free service in thousands of sheet metal fabricating plants throughout the world.

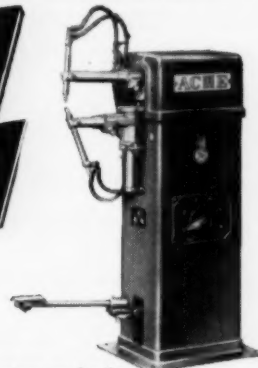
LIFETIME GUARANTEE!

Complete range of sizes. Write for literature and prices.

ACME ELECTRIC WELDER CO.

2618-B Fruitland Road

Los Angeles 11, Calif.



Your local jobber stocks Penn ventilators in all sizes. Specialized engineering advice available without obligation. Write for FREE literature.

Compare these features!

- WEATHER PROOF ROTOR HEAD
- DUST TIGHT STEEL BALL BEARINGS
- AUTOMATIC - CONSTANT - SILENT
- NO MAINTENANCE REQUIRED
- RIGIDLY BRACED
- HEAVY GAGE STEEL

PENN VENTILATING CO.

Goodman above Allegheny Avenue
Philadelphia 40, Pennsylvania

a backdraft in cold weather. While under certain conditions, gravity action will be sufficient to take out the fumes, it is advisable to keep the duct damper closed in winter, when the fan is off, unless experience proves that the installation never has a backdraft. The fan ventilator carries a standard 200 per cent gravity exhaust head on which wind action will always produce an exhaust. There may be a low pressure area in the building which will be stronger than the exhaust action of the ventilator, in which case there will be a backdraft. This is not likely to happen in summer when the door in the box at the ceiling is open.

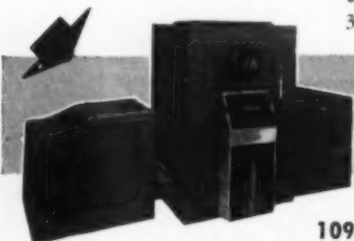
Inasmuch as a fan in this type of installation is handling fumes which are likely to be explosive, it was considered advisable to specify an explosion-proof motor. While the possibility of a fume concentration

great enough to ignite is quite remote, inspectors recommend explosion-proof motors on jobs of this kind.

Two distinct problems were encountered here, namely summer ventilation and winter ventilation. Summer ventilation calls for a great volume of exhaust from the highest point. Winter ventilation calls for a minimum of exhaust from the low point. Inasmuch as the hot air goes to the ceiling, it will naturally be withdrawn through an exhaust at any point in the ceiling, although it should be as far away from intakes as possible. Since the fumes drop to the floor in winter, they will travel along the floor to the exhaust, if the exhaust is at the floor. It is advisable however to have the point of exhaust not too far away from the points of fume-production. The layout as proposed will meet all of these requirements.

EFFICIENT HEAT *without* CLINKER NUISANCE in the NEW **Majestic** STOKER FURNACE

This smartly designed, rugged unit is tops in home-heating service, convenience, and economy. Special crown radial fins boost heat output. Inner can permits clean, easy clinker disposal. Any domestic stoker fits either side. It's a Majestic climax to 38 years' experience in heating.



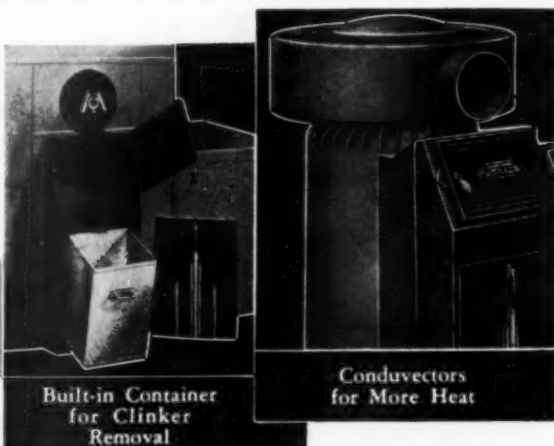
Made of **HEAVY DUTY STEEL**

For **GRAVITY or FORCED AIR SYSTEMS**

THE Majestic CO.

1094 Erie St.

Huntington, Ind.



Built-in Container
for Clinker
Removal

Conductors
for More Heat

Heating
Sheet Metal



Air Conditioning
Supplies

Furnace pipe, adjustable
elbows and Fittings

ALSO: Complete line sheet metal hand tools

Frank X Enderle, Inc., Ltd.

1600-1700 San Fernando Road, Los Angeles 41, Cal.

Chicago Steel Bending Brake



STANDARD HAND BRAKE
ONE MAN OPERATION

DREIS & KRUMP MANUFACTURING CO.
1404 LOOMIS BLVD. CHICAGO 36, ILL.

MOVE 30% MORE AIR

at less power cost!



Here's a new idea that revolutionizes ventilating... the Air-Van Power Exhauster moves 30% more air at less power cost! Accepted everywhere for its phenomenal performance, superior design and splendid construction, the Air-Van Power Exhauster is your answer to all ventilating problems! Write for complete details today.

THE GALLAHER COMPANY OWATONNA, MINNESOTA

Available
Now!

CHENEY FLASHING
16 OZ.
COPPER 3 WAY BOND

CHENEY FLASHING
16 OZ.
COPPER
REGLET

SEE
YOUR
IRONER
OR
WRITE US—

CHENEY FLASHING CO. Trenton, N.J.

MILTON

SHEET METAL
MACHINERY SPECIALISTS

ROLLS • SHEARS • BRAKES
PUNCHES • HAND TOOLS

NEW and USED
Immediate Delivery

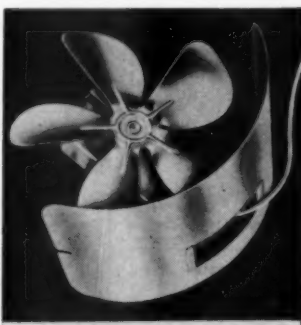
MILTON EQUIPMENT CO.

402 RACE ST.

PHILADELPHIA 6, PENNA.

HEAT THAT COLD ROOM

This self-cooled booster fan will do the job better because it's ventilated. Oil only twice a year without removing the fan from warm air pipe. Long lasting, quiet, efficient, runs on house current, weighs only 1½ lbs. Fits pipe sizes from 8" to 12", very simple to install. Can be operated with switch, automatic fan control or thermostat. Thousands now in use. Ask your jobber today or write us for prices. Insist on McLarty, the only ventilated booster fan on the market.



McLARTY VENTILATED
BOOSTER FAN

McLARTY SYSTEMS

201 W. Mich. Ave.
Battle Creek, Mich.

Make this a SUPER Year!

Clean furnaces in your community with a Super Red Streak Furnace Cleaner and watch your profits grow! Super Cleaning is done hot or cold. Reveals the need for repairs, replacements, and new plants.

The Red Streak takes all the hard labor out of furnace cleaning. Super chimney cleaning tools work from the bottom up. Keeps you off slippery roofs. Try a Super 5 days free. Keep what it makes even if you don't keep the Super. Write for data.

National Super Service Company, Inc.

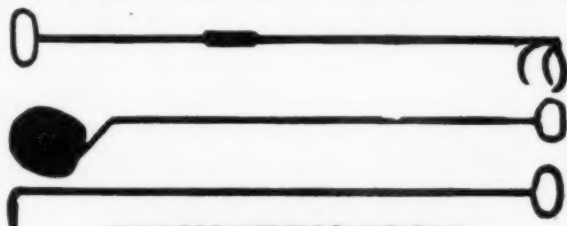
1944 N. 13th St.

Toledo 2, Ohio

National Super Service Co. of Canada

Toronto, Ont.

Vancouver, B. C.



ADAMS FIRING TOOLS

CLINKER TONGS
ASH REMOVERS

FURNACE POKERS
FIRE RAKES

FIRING HOES

Buy Adams Known Quality

THE ADAMS COMPANY

BRIDGE STREET

DUBUQUE, IOWA

REPAIR PARTS

USE **Vernois** ORIGINALS

Homes all over the country are being heated by Vernois Furnaces. Many of them are old installations and sooner or later repairs will become necessary. When they do, be sure you use only original Vernois repair parts for a tight lasting repair job.

MT. VERNON FURNACE & MFG. CO.

MT. VERNON, ILLINOIS

ORNAMENTS



STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING

65 YORK STREET

BROOKLYN, N. Y.

Sheet Metal Machinery

Pittsburgh Lock

Stovepipe and Elbow

Roll Forming Machinery and Dies

Maplewood Machinery Co.

2634 Fullerton Avenue

Chicago, Ill.



"CRARYS" RAIN WATER CUT OFFS

Made in all Standard
Conductor Pipe Sizes.
Plain Round and Cor-
rugated Round.

Write for Prices and
Name of your nearest
Jobber.

GALVAN MANUFACTURING CO.

New Albany, Indiana

CLASSIFIED ADVERTISING

Classified Section: Rates for classified advertising are 8 cents for each word, including heading and address. One inch \$4.00. Count seven words for keyed address. Minimum \$2.00 for each insertion. Cash must accompany order.

situations open

MANAGER: For old established steel furnace and Air Conditioning manufacturing plant in Pacific Northwest.

We manufacture and sell. Distributors only. Experience desirable but not entirely essential. Desire younger man with good mechanical education capable of keeping down production cost, planning and processing work in shop, also be sales conscious and able to handle sales to distributors. Plant has latest type of production machinery. Owners have other interests and cannot devote much time to furnace business. Write full particulars, giving age, experience, education, nationality and salary expected. Address Key #750, American Artisan, 6 No. Michigan Ave., Chicago 2.

HEATING EQUIPMENT SALESMEN! Here's a real opportunity with a long-established leader in the home heating industry. Two good territories are open. For men (age 30-45) with successful experience selling to heating jobbers and dealers. Eastern territory includes Pennsylvania, Virginia, West Virginia, and Maryland; the other covers Ohio and Indiana.

Write today giving full details: age, experience, income requirements, etc. Your reply held confidential. Address—L. J. Mueller Furnace Company, 2001 W. Oklahoma Ave., Milwaukee 7, Wisconsin.

wanted

WANTED—Shearings any amount—all sizes. Galvanized, cold and hot rolled aluminum. Stainless and copper 6" minimum width to 36" minimum length, uniform quantities. Gauges from 16 to 30 inclusive.

Write or wire
Los Angeles Sheet Metal Mfg. Co.
901-903 East 9th Street
Los Angeles 21, Calif.
Trinity 4713

for sale

Appliance, stove and furnace business wholesale. In southern California. All new stock. No liabilities. Wonderful opportunity in fastest growing part of U. S. \$75,000.00. Cash full price. Address Key #748, American Artisan, 6 No. Michigan Ave., Chicago 2.

AIR FILTERS—FIBERGLAS

"Dust-Stop" Replacement Type
10" x 10" x 2"

Brand New—Original Factory Cartons

10c Each—Quantity Purchases
(Cost Government 90c each)
Sample on request

HAND TUBE BENDERS—400

Parker 2829A—Size No. 7

HELIUM OR HYDROGEN VALVES

Kerotest, #132—Brass

SURPLUS TRADING CO., INC.

128 N. 3rd St.

Phila. 6, Pa.

FOR SALE: Plumbing, Heating and Sheet Metal Shop in East Central, Illinois. Average \$100,000 gross business per year. Will sell at inventory price. Write Key #747, American Artisan, 6 No. Michigan Ave., Chicago 2.

FOR SALE—20 to 25 squares used Ludowici-Celadon Imperial Straight Barrel Mission Tiles 14 1/4" Long, Color Red. 10 to 12 squares Imperial Interlocking Shingle Tile 11" x 8 3/4", Color Green. Will make reasonable price on the whole lot. Write A. Elbing & Sons, Pontiac, Michigan.

Complete modern sheet metal shop, equipment—used 12 months, any part or all for sale. Address Key #751, American Artisan, 6 No. Michigan Ave., Chicago 2.

Use Classified Space

to Sell or to Find

Quickly and at Low Cost

lines wanted

WEST COAST REPRESENTATIVE AVAILABLE. Interested in representation of complete line of automatic heating equipment in Washington, Oregon and California. More than 15 years of service, sales, engineering and management experience with dealers, jobbers and manufacturers. Thorough knowledge of automatic control problems. Your interest would be welcomed thru Key #749, American Artisan, 816 West Fifth St., Los Angeles 13, California.

situation open

WANTED—A first class sheet metal worker and ventilating man to take over as foreman; if you can estimate, it will be an advantage. This is a modern shop in the best business area in the U. S. If you can qualify you may obtain a working interest in the business. Queen City Heating & Ventilating Co., Sioux Falls, S. D.

HERE IS A GENUINE OPPORTUNITY IN ALASKA. Require high caliber man qualified to take complete charge of heating and sheet metal shop. Proper individual will be invaluable to assist in development and expansion of growing business. Investment with right party will be considered. Address Key #752, American Artisan, 6 No. Michigan Ave., Chicago 2.

situation wanted

SALES ENGINEER—SALES MANAGER. Age 40 years—technical and business education and training. Experience with all types of buyers. Can build and train retail organizations. Prefer middle Atlantic area. Address Key #746, American Artisan, 6 No. Michigan Ave., Chicago 2.

miscellaneous

ANNOUNCING — NEW LOCATION

S. J. JOHNSON COMPANY

Sheet Metal Working Tools and Machinery

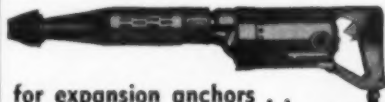
NOW AT — 271 E. Robinwood

Detroit 3, Michigan

Telephone — TWInbrook 3-8260

AMERICAN ARTISAN SERVICE SECTION

How to drill concrete



for expansion anchors . .

You can drill holes thru concrete walls, floors, ceilings, 12 to 15 times faster than by hand. Use the Wodack DO-ALL Electric Hammer. Typical example: drills a 3/8" hole 1" deep thru average concrete in less than 15 seconds! Saves time and money. You also use Wodack DO-ALL for channeling concrete, drilling wood, metal, etc. Investigate.

WRITE TODAY FOR BULLETIN 471-AA
Wodack Electric Tool Corporation
4627 W. Huron St., Chicago 44, Ill.

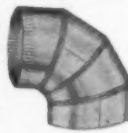
METAL ELBOWS

Galvanized - Black - Tin and
Wilder - Adjustable Elbows
Machine Riveted.

Quick Deliveries

Juniper Elbow Co., Inc.

72-15 Metropolitan Ave.
Middle Village, L. I., N. Y.



GRAND RAPIDS FURNACE CLEANERS

Write for Details
**DOYLE VACUUM
CLEANER CO.**

227 Stevens St., S.W.
Grand Rapids 7, Mich.



SHEET METAL MACHINERY Immediate Shipment

CHICAGO BENDING BRAKES
ADJUSTABLE BAR FOLDERS
SQUARING SHEARS—CIRCLE SHEARS
SLIP ROLLS—ROTARY MACHINES
PITTSBURGH LOCK MACHINES
SPOT WELDERS—ARC WELDERS
POWER PRESSES—FOOT PRESSES
FLOOR, BENCH & PORTABLE DRILLS

Many Other Items

Write for stock list and prices
and specify machines required

B. D. BROOKS CO., Inc.

Tel. HANcock 5226

361 ATLANTIC AVE. BOSTON 18, MASS.

—M11

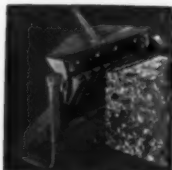
Service Section: Rates for display space in the Service Section are \$8.50 per inch per insertion. One-inch minimum space accepted.

SERVICE SECTION

SMITH'S CLEAT BENDERS

THE COMPLETE DRIVE CLEATING MACHINE

- Bends Uniform Cleat Edges on Square Pipe in Less than 5 Seconds.
- Makes Perfect Drive Cleats in Less Than 8 Seconds.



- The Only Machine That Does Both Operations.
- Standard Equipment in All Duct and Furnace Shops.

NO. 12
Takes All Sizes Up to 12"

NO. 18
Takes All Sizes Up to 18"

Write for More Information.

R. E. SMITH 1513 MONROE, WAUKEGAN, ILL.

THOR GOVERNMENT CLIP DIES

Hand Operated

Immediate Delivery

Ask your local dealer or write for literature.

THOR TOOL & DIE CO.

191 Geary Road
Walnut Creek, Calif.

LOOKING FOR AN ECONOMICAL
ADVERTISING MEDIUM TO
PROMOTE YOUR SALES?

TRY THIS SECTION
FOR PROMPT REPLIES

FULL LINE OF

METAL WORKING

EQUIPMENT

BRAKES

SLIP ROLL FORMERS

FOR IMMEDIATE SHIPMENT

LOCKFORMER

SHEARS

You are assured of prompt delivery of hard-to-get materials when you buy your equipment from one of this country's largest distributors of sheet steel and aluminum sheets.

POTTS-FARRINGTON CO.

FORMERLY W. F. POTTS, SONS & CO., INC.

4250 WISSAHICKON AVE., PHILADELPHIA 29

PHONE BALDWIN 3-1000

SHEET METAL MACHINES & TOOLS

— LOCKFORMERS —

- AGE Soldering Torches - Pots & Tanks
- Steel Hand Brakes • Press Brakes
- "Rex" Spot Welders • "Pexto" Shears, Folders, Rolls, Rotary Machines, Etc.
- Whitney Tools & Machinery
- Marshalltown Throatless Shears
- Electric Shears, Drills • Shop Tools
- Smith Cleat Benders

Complete Line of Sheet Metal and Ventilating Supplies



WHEN IN CHICAGO VISIT OUR
MACHINERY SHOWROOMS

CENTRAL-WEST MACHINERY CO.

335 SO. WESTERN AVE.

Haymarket 1-8361

CHICAGO 12, ILL.

HANDY CRIMPING PLIERS

"LITTLE GIANT"
PIPE CRIMPER



Saves
Carrying
Heavy
Machine
on Job

Makes perfect CRIMP, EASY and QUICK
COMPOUND LEVERAGE, UNIQUE DESIGN,
POWERFUL, LIGHT, STRONG. FULLY GUAR-
ANTEED.

Sent Postpaid \$1.95, if your jobber can't supply.

OTHER PIONEER PRODUCTS

- DO-MOR ADJUSTABLE SAW HANDLES
- CLAMPS for soldering CUTTERS
- STEEL BEAM ADJUSTABLE TRAMMELS

When sending for catalog, please state your jobber's name.

PIONEER TOOL COMPANY

1103 Wisconsin Ave., Racine, Wis.

INDEX TO ADVERTISERS

AC Co., The.....*	Field Control Div., H. D. Conkey.....*	Patten Co., J. V.....8
Accurate Sheet Metal & Mfg. Works.....*	& Co.....*	Peerless Air Conditioning Co., Inc.....116
Acme Electric Welder Co.....147	Fireline Stove & Furnace Lining Co.....*	Peerless Elec. Co.....129
Acme Equipment Company.....*	Forest City Foundries Co., Inc.....*	Peerless Foundry Co.....125
Adams Co., The.....149	Fox Noiseless Hammer Co.....*	Penn Electric Switch Co.....21
Aerofin Corp.....*	Frayn Co.....*	Penn Ventilating Co.....147
Ahlberg Bearing Co.....*	Frey & Co., Frank P.....*	Perfection Stove Co.....*
Air Conditioning Products Co.....139	G & S Machine Shop.....*	Perflex Corp.....*
Air Controls, Inc.....*	Gallaher Co.....148	Petersen Mfg. Co.....*
Air Controls Prod., Inc.....*	Galvan Mfg. Co.....149	Permanente Metals Corp.....56
Air Cooling Engrg. Co.....131	General Blower Co.....*	Petroleum Heat & Power Co.....14
Airtemp Div. of Chrysler Corp.....110	General Controls.....143	Pioneer Tool Co.....151
Airtherm Mfg. Co.....*	General Elec. Co.....114	Potts Farrington Co.....151
A-J Mfg. Co.....*	General Filters, Inc.....114	Premier Furnace Co.....*
Ajax Furnace Fitting Co.....*	General Oil Burner Corp.....129	R C S Tool Sales Corp.....145
Allen Co., Inc., L. B.....146	Gerett Corp., M. A.....147	Radiation Furnace Corp.....*
Alton Mfg. Co.....*	Gerhardt Co., Inc., George T.....146	Randall Graphite Bearings, Inc.....128
American Brass Co.....41	Gilbert & Barker Mfg. Co.....49	Reed Engrg. Co.....143
American Machine Products.....*	Goergen-Mackwirth Co., Inc.....*	Register & Grille Mfg. Co., Inc.....125
American Radiator & Standard Sanitary Corp.....27	Great Nat'l Air Cond. Corp.....*	Reinhard Bros. Co.....24
American Screw Co.....*	Hall-Neal Furnace Co.....19	Republic Steel Corp.....*
American Zinc Institute.....*	Harrington & King Perforating Co.....141	Research Products Corp. Outside Back Cover
Anchor Div. Stratton-Terstepge Co.....121	Harris, A. R.....*	Revere Copper & Brass, Inc.....99
Anchor Mfg. Co.....144	Hart & Cooley Mfg. Co.....17	Reznor Mfg. Co.....141
Anchor Post Products, Inc.....51	Hell Co.....*	Richmond Radiator Co.....39
Anemostat Corp. of America.....*	Henry Furnace Co., The.....34	Riverside Machinery Company.....*
Anthractite Institute.....59	Hess Co., The.....*	Rock Island Register Co.....139
Armco Steel Corp.....*	Hexdall Co., A. M.....145	Roto-Table Co.....*
Armstrong Co., The.....131	Holly Mfg. Co.....*	Round Oak Co., Inc.....23
Atlas Mfg. Co.....*	Hotstream Heater Co.....120	Rybolt Heater Co.....60
Auer Register Co.....20, 47 & 147	Hussey & Co., C. G.....*	Saginaw Saw Co.....*
Automatic Electric Mfg. Co.....*	Illinois Testing Laboratories, Inc.....*	Sampsel Time Control Co.....*
Automatic Humidifier Co.....48	Independent Pneumatic Tool Co.....*	San Angelo Fdry. & Machine Co.....*
Automatic Products Co.....117	Independent Register Co.....130	Schaefer Brush Mfg. Co.....*
Bacharach Industrial Instrument Co.....145	Inland Steel Products Co.....88	Schwab Furnace Co.....*
Barber Colman Co.....12	International Nickel Co., Inc., The.....*	Schwitzer-Cummins Co.....52
Barber Gas Burner Co., The.....140	International Oil Burner Co.....144	Sequoia Mfg. Co.....*
Bauer & Black, Div. Kendall Co.....*	Interstate Machinery Co.....*	Skillsaw, Inc.....*
Bayley Blower Co.....147	Iron Fireman Mfg. Co.....*	Skuttle Mfg. Co.....151
Berger Bros. Co.....146	Jackson & Church Co.....*	Smith, R. E.....119
Berger Mfg. Co., Div. of Republic Steel Corp.....22	Johns-Manville Corp.....*	Standard Heating Equip. Co.....142
Bethlehem Steel Co.....44	Johnson Gas Appliance Co.....*	Standard Stamping & Perforating Co.....*
Beverly Shear Co.....138	Jones & Brown, Inc.....54 & 55	Steel City Furnace, Inc.....*
Bishop & Babcock.....140	Juniper Elbow Co., Inc.....150	Stefco Steel Co.....*
Black & Decker Mfg. Co.....*	Kalamazoo Stove & Furnace Co.....*	Stewart Mfg. Co.....10
Black, Sivalls & Bryson.....127	Kane & Roach, Inc.....*	Sundstrand Engrg. Co.....*
Brauer Supply Mfg. Co., A. G.....147	Kaustine Co., Inc.....115	Sundstrand Hydraulic Div.....*
Brenner Co., Jacob.....*	Kirk & Blum Mfg. Co.....*	Sundstrand Machine Tool Co.....50
Brooks Co., Inc., B. D.....150	Kresky Mfg. Co.....*	Superior Products Co.....*
Brundage Co.....42	Krueger Sentry Gauge Co.....6	Surface Combustion Corp.....*
Bryant Heater.....57	Lau Blower Co.....18	Swartwout Co.....*
Buffalo Forge Co.....*	Lexington Supply Co.....30	Synchromatic Corp.....5
Cady Co., The.....*	Libert Machine Co.....*	Tennessee Coal, Iron & R. R. Co.....3
Cam-Stat, Inc.....*	Lockformer Co.....9	Thatcher Furnace Co.....31
Carnegie-Illinois Steel Corp.....3	Made-Rite Furnace Pipe & Fitting Co.....143	Thor Metal Prod. Co.....*
Central-West Machinery Co., Inc.....151	Maid-O'-Mist, Inc.....32	Thor Tool & Die Co.....151
Century Engrg. Co.....*	Majestic Co.....148	Tjernlund Mfg. Co.....137
Certified Furnace Co.....122	Maplewood Machinery Co.....149	Trade Winds Motor Fans, Inc.....143
Champion Tool Co.....*	Marshalltown Mfg. Co.....*	Triangle Mfg. Co.....133
Char-Gale Mfg. Co.....111	Maurey Mfg. Co.....*	Turner Brass Works.....*
Cheney Flashing Co.....148	May-Fiebeger Co.....142	Tuttle & Bailey, Inc.....*
Chevrolet Motor Div., General Motors Corp.....*	Mayflower Air Conditioners, Inc.....*	Twin City Gas Specialty Co.....*
Chicago Metal Mfg. Co.....127	McDonnell & Miller, Inc.....*	Union Mfg. Co.....*
Cincinnati Elbow Co., The.....141	McLarty Systems.....149	U. S. Air Conditioning Corp.....*
Clarage Fan Co.....*	Mercord Corp. The.....*	U. S. Machine Corp.....28
Clayton & Lambert Mfg. Co.....*	Metromatic Mfg. Co.....43	United States Register Co.....123
Co., Inc., Inside Front Cover	Meyer & Bro. Co., F.....*	United States Steel Corp.....3
Clean Sweep Co., The.....146	Meyer Furnace Co.....7	United States Steel Export Co.....3
Cleveland Humidifier Co.....139	Midco Register Corp.....*	United States Steel Supply Co.....3
Cole-Sewell Engrg. Co.....*	Miller & Doing.....149	Utility Appliance Corp.....133
Columbia Steel Co.....3	Milton Equipment Co.....149	Van Packer Corp.....*
Comfort Products Corp.....45	Minneapolis-Honeywell Regulator Co.....*	Viking Air Conditioning Corp.....26
Conco Engineering Works.....*	Morrison Products, Inc.....*	Ward Machinery Co.....*
Condensation Engineering Corp.....*	Morrison Steel Products, Inc.....109	Washington Steel Corp.....*
Connor Engr. Co., W. B.....136	Mt. Vernon Furnace & Mfg. Co.....149	Waterman-Waterbury Co.....74
Corlett-Turner Co.....145	Mueller Furnace Co., L. J.....13	Webb Machine & Tool Co.....*
Coroalre Heater Corp.....46	National Air Conditioning, Inc.....*	Webster Electric Co.....*
Cotta Transmission Corp.....146	National Engr. & Mfg. Co.....*	Weltron Steel Co.....35
Crescent Tool Co.....40	National Heater Co.....*	Western Engrg. Co.....142
Crise Elec. Co.....137	National Lock Company.....124	Westinghouse Electric Corp.....*
Dahlstrom Machine Works.....*	National Metal Fabricators.....112	White Mfg. Co.....11
Damascus Steel Products Corp.....*	National Super Service Co.....149	White-Rodgers Elec. Co.....*
Delco Products Div. — General Motors Corp.....38	Nelson Corp., Herman.....118	Whiteley Bearing Corp.....*
Delta Manufacturing Div., Rockwell Mfg. Co.....135	Niagara Machine & Tool Works.....36	Whitney Mfg. Co., W. A.....141
Des Moines Stove Repair Co.....136	Northwest Foundry & Furnace Co.....134	Whitney Metal Tool Co.....139
Detroit Air Filter Co.....*	Nu-Way Corp.....*	Williams Oil-O-Matic Division
Detroit Lubricator Co.....*	Obdyke Inc., Benjamin P.....*	Eureka Williams Corp.....*
Dickman Co., Ferdinand.....*	Oil-Heat Institute of America, Inc.....138	Williamson Heater Co.....*
Doyle Vacuum Cleaner Co.....140 & 150	Olsen Mfg. Co., C. A.....16	Willis Steel Corp.....*
Dravo Corp.....37	Omaha Stove Repair Works.....*	Wilson & Co., Inc.....*
Dreis & Krump Mfg. Co.....148	Owens-Corning Fiberglass Corp.....53	Wilson, Inc., Grant.....113
Dresser Industries (See Bryant Heater Co.).....*	Pacific Industrial Mfg. Co.....*	Wilson, K. R.....15
Dwyer Mfg. Co., F. W.....144	Packard Elec. Div., General Motors Corp.....33	Wise Furnace Co.....*
Elgo Shutter & Mfg. Co.....*	Paragon Elec. Co.....*	Wiss & Sons Co., J.....100
Enderle Inc., Ltd., Frank N.....148	Parker-Kalon Corp.....29	Wodack Electric Tool Co.....150
Fallsington Mfg. Co.....*		Wolf & Co., Benjamin.....Inside Back Cover
Famous Furnace Co.....*		Wysong & Miles Co.....25
		XXth Century Htg. & Vent. Co.....126
		Zink Co., John.....*

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.

Stainless steels are special service steels



that's why

Wolff Metal Service gives you Special Dispatch Service

with 24-hour delivery on all orders for stainless steel sheets

Warehouses vary in their characteristics as much as do the twelve types of stainless steel sheets. For example, if you're the kind that likes alert, responsive action on your orders, the warehouse for you is Wolff Metal Service where you can always get next-day delivery on your requirements . . . frequently enough same-day delivery if you are located within the immediate Chicago area.

No urgency plea is needed to enjoy this brand of service. Real drive behind delivery is as standard a Wolff quality as the alloy composition in the type of sheet you specify. So call Republic 7-9100 or write when next you're in the market.



Carbon Steels, Stainless Steels, Aluminum, Copper, Tinplate, Metal Decorating

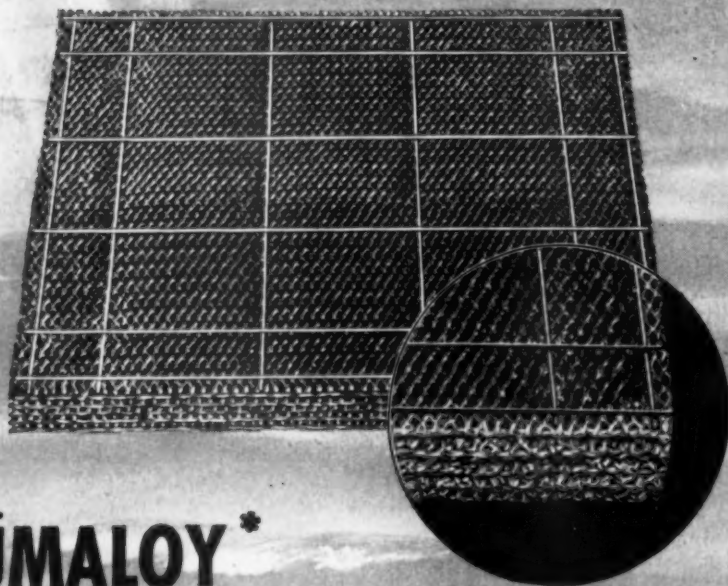
BENJAMIN WOLFF ^{AND} COMPANY

General Office and Warehouse — 5800 South Seeley Ave., Chicago 36, Ill.

Wisconsin Office — 176 W. Wisconsin Ave., Milwaukee 3, Wis.

Announcing

a great new **RP** achievement
in modern air cleaning...



NEW **RP** ALUMALLOY^{*} Self-Seal AIR FILTER

* Self-Seal edge packs
close, prevents by-
passing unfiltered air.

This new R-P Air Filter combines for the first time the famous "Self-Seal" features with the unique depth-filtration, dirt-stopping qualities of R-P ALUMALLOY (Aluminum foil) filter media. The efficient "air scrubbing" multiple-layered baffle pattern with its thousands of adhesive dirt-catching surfaces is free of the usual integral frame. Made slightly oversize it fits snugly on all sides, providing filtering efficiency to the

extreme edges and preventing by-passing of unfiltered air by "sealing" all edges. This means added dust-holding capacity and cleaner air for modern forced air units, air conditioning and ventilating applications. Get the whole story on the "World's finest air filter," new R-P ALUMALLOY Self-Seal. It offers you TOP benefits in better, longer-lasting, rechargeable air filters — for more effective, more economical air cleaning.

Write today for new Techni-Data Sheet.

*Trademark registered



RP RESEARCH PRODUCTS CORPORATION

DEPT. A, MADISON 10, WISCONSIN

RP *Filters for Finer Living*

CHOSEN AS STANDARD EQUIPMENT BY LEADING MANUFACTURERS